The Builder.

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ILLUSTRATIONS.

City of London Court: General and Detail Elevations.—Mr. A. Murray, Architect 878-879
St. Andrew's Parish Church, Longton, Lancashire.—Messrs. J. E. K. and J. P. Cutts, Architects 882-883
Westminster Abbey, Henry VII.'s Chapel: Stalls of the Knights of the Bath 886-887
Chetham Hospital, Manchester.—Measured and Drawn by Mr. J. Needham Wilson 890-891

CONTENTS.

Ancient Sepulchral Monuments 867
A Sanitary Hitch 868
Notes 869
Royal Institute of British Architects 870
The Constantinople Museum 872
The Proposal to make Architecture a Close Profession by imposing the Test of Examination and Registration 873
New City of London Court, Guildhall 876
Stalls, Westminster Abbey 876
St. Andrew's Church, Longton, Lancashire 876
Chetham Hospital, Manchester 893
The Engineering and Applied Science Department of King's College, London 894
Architectural Association 894
Architectural Societies 897
Competitions 897
Line of Frontage under the Public Health Act: Nankivell *v.* The Bournemouth Commissioners 898
Case under the Metropolitan Building Act 898
"St. Augustine and St. Alban's Abbey" 898
The Theatre Managers and the Officers of the Metropolitan Board 898
Walton-le-Dale Sewerage Scheme 898
Ownership of Drawings 898
Parish Taking over Roads 898
The Student's Column: Land Surveying and Levelling 899
Recent Patents 899
Recent Sales of Property 900
Miscellanea 900
Prices Current of Materials 901

Ancient Sepulchral Monuments.

THE very fine illustrative volume published by Mr. Brindley and Mr. Weatherley under the above title* is, as we are told in the brief preface, "the outcome of what was originally a comparatively small collection of drawings of ancient sepulchral monuments made at different times, to aid those who, rebelling at the ordinary modern monument, desired a worthier and more satisfactory memorial." It has been expanded into what is intended as a text-book of monuments of this kind, from the earliest to the latest times, the drawings being for the most part to a uniform scale of one inch to the foot, with in many cases sections and details one-fourth the real size. The book, as may be seen at a glance, must have been the work of years. The drawings have mostly been carefully made, and are very well reproduced, and comprise an immense number of examples which are not only very fine in themselves and historically interesting, but which are also very suggestive as starting-points from which to work out new ideas in monumental designs of this kind.

The subject is so large that it may be fairly said that no single volume could well be a text-book of it, if we are to understand by that a book of reference which will contain examples of every type of monument which has been erected by mankind to commemorate the departed; and it would hardly be possible for any one, except with an almost unlimited command of time and funds, to produce a really complete *corpus* of examples of this class of architectural designs. The subject is endless, in fact, and it is no slight credit to the authors that they have illustrated it so largely as they have in one folio volume; but it cannot be regarded as giving a complete illustration of the subject. Among the well-known types of monument, we hardly find the Greek tombstone with bas-relief subjects illustrated so well as it deserves to be; the drawings given of these show very well the various beautiful types of foliated ornament which form the finish to the apex of many of these works, and which constitute a kind of comparative study of the Greek anthemion ornament used in this portion in so many various forms and with so many curious and significant differences of detail; but of the bas-relief sculpture subjects the best that are available have hardly been selected, and those which are given are on too small a scale for full justice to be done to them; they are the smallest in scale of all the drawings in which figures are introduced, and they certainly deserved a large scale and careful illustration more than any of the Renaissance monuments to which fuller justice has been done. Nor do we find any example of the very best type of English Renaissance monuments, such as we see exemplified in the Clopton monument at Long Melford, and the Paston monument at North Walsham. We may also question whether all the monuments figured here are really such as would present themselves as models to those who desire "a worthier and more satisfactory memorial" than the modern monument. This remark is, in fact, a little out of date now, for there have been some very fine monuments executed of late years here and there, some of them worthy to take rank with the very best in this book (*e.g.*, Mr. Gilbert's Fawcett monument in Westminster Abbey), and on the other hand some of those that are given are, though historically valuable, not such as we should be prepared to hold up as by any means models for imitation. We should imagine, for instance, that the monument on plate 161, with its coarse Classic details and broken pediments, or 164, with an urn in relief on a pyramidal slab, or Nos. 205 and 206, or No. 208, a pyramid with spheres at the base standing on a surbase with a heraldic sculptured panel, would be the kind of thing which would suggest in the mind of most persons a desire for a "worthier" monument, something with more refinement of detail and more seriousness of aim and feeling about it. These examples were, however, necessary in a historical point of view; we only demur at being asked to admire them or to consider them as examples of what a monument ought to be; the expression in the preface rather leads to the conclusion that the authors regard all these as good examples; and here we must differ.

That is, however, all the criticism we have to make on the book, which is a very fine and a very useful one. Some of the plates which now appear in it have been previously published in our pages, one a fortnight ago, the marble tablet from Siena (*Builder*, December 10, p. 819), and one or two more a good while previously, one of these being one of the finest and most characteristic in the book, the highly-enriched cross standing in relief against a wall in the cloister of San Juan de los Reyes, at Toledo. The classes of monuments are arranged in groups, and in each group as far as possible chronologically. We commence with Egyptian obelisks, of which five are given, including two drawings of that monument of remarkable vicissitudes which is dated in the corner of the plate "Heliopolis, B.C. 1500; Alexandria, B.C. 23; London, A.D. 1878": and who knows where next? For it may outlast several more empires, for anything we know. Then follow some of the Assyrian obelisks now in the British Museum, with their tops worked in steps or stages, two of them in sloping lines, like an imitation on a small scale of the type of tower with inclined plane stages round it, which has sometimes been made to do duty for the mythical Tower of Babel. An important distinction between these and the Egyptian type is that, whereas in the latter the ornaments and sculptures and hieroglyphics are worked in intaglio out of the main surface of the granite, in the Assyrian examples the sculpture subjects are enclosed in panels formed by sinking the ground, and leaving the figures in relief on it, their upper surfaces being on the same plane with the main surface; in other words, in the Egyptian examples, it is the design that is incised; in the Assyrian examples, the spaces round the figures are incised, and the figures left in relief.

The obelisk is one well-marked and distinct type of monument. If we were to endeavour to classify the forms of monument that have been used we might, perhaps, divide them into the obelisk form, the cross (which may be called the Christian parallel to the obelisk); the sarcophagus, with or without a figure on it; the upright sculptured slab, including the Greek stele; the horizontal sculptured slab; similar forms of slab with only inscriptions and no carving except a little bit of decorative heading or border; and the arched recess, Gothic or Classic, with a figure included within it. The sarcophagus is one of the most long-lived and most constantly-recurring forms; there is something in its heavy solid form and horizontal lines which suggests, more perhaps than any other of the accepted monumental forms, the idea of imperishable endurance; and accordingly we have it used almost *ad nauseum* in modern burial-grounds, as a mere exterior form from which all use and all its original meaning as the receptacle for the body has departed; and in many examples, such as the tomb from St. Cecilia in Trastevere at Rome (given in plate 174), the figure, which originally should have been enclosed in the sarcophagus, is sculptured as reclining on the top of it. The sarcophagus seems to have been the originating form of the late English table-like monument. The two forms are shown together, whether intentionally or not, in the two late English tombs given on plate 203,

* Ancient Sepulchral Monuments; containing Illustrations of over Six Hundred Examples from various Countries and from the Earliest Periods down to the End of the Eighteenth Century; with descriptive and general Index. By William Brindley and W. Samuel Weatherley, F.R.I.B.A. London: Printed for the authors by Vincent Brooks, Day, & Son. 1887.

both of which are nearly alike in the design of the side, but in one the top is made in pediment section, in the other it is flat. Among the examples given are the two from St. Apollinare in Classe at Ravenna, which are called sarcophagi, but which have lost the old Roman form, and become more like cabinets, with a semicircular top, and in one case an arcade in relief at the side, in the other case a frieze with vine scrolls and figures of peacocks. These are very interesting, and the first-named one is a good bit of miniature architectural design, but they have lost the characteristic massiveness and imperishable appearance of the Roman sarcophagus. Some of the examples given in this book are of interest not only as varieties of sarcophagus form, but as constituting examples of different phases and styles of ornamental treatment: there is the characteristic Etruscan one in the British Museum, with its reminiscence of a temple roof with roll tiles and antefixæ, and the band of foliage carved out of the surface of the stone, dividing the height in half; there is the Roman example found in London in 1853 (plate 21) and now in the British Museum, the sides decorated with a large spiral ornament in flutes, which is interrupted in the middle of its length by a medallion with a head in alto-relief within it, and the one (B.C. 298) in the Vatican Museum (plate 20), a solid-looking piece of work showing, however, the want of fancy and imagination of the Romans, the whole thing being a Roman Doric architrave and entablature with a boldly-moulded base added at the foot of the "entablature." It is noticeable that in this portion of a Doric order, from which the column is omitted, the triglyph is placed at the angle, as in Greek work, apparently showing that the Romans, when there were no columns to trouble them, preferred that treatment to the one they adopted over the column order, of thrusting the triglyph away from the corner. There is an Egyptian sarcophagus given on plate 5, with a pedimented head and hanging wreaths, executed in a manner suggestive of the granite material in which we presume it was worked, with wreaths of the severest outline with no surface carving or indications of leafage on them; but is this one (at Mehallet el Kebyr) in the true sense Egyptian? The authors do not suggest a date. It looks to us more like a Roman idea executed by Egyptian hands.

The treatment of the cross in monumental work is a curious study of variety in the way of regarding and treating the same object, when we see, as here, a number of examples from different countries and periods together. One of the most curious and interesting is one on the first page in which crosses appear (plate 30), a slab built, we are told, into a ruined church in Athens, and showing a cross with two cross arms (like a double transept) one above the other, formed by an interlacing ornament, and with a base looking like an outlined section of steps. In two circles under the main arms of the cross are figures of birds, over them two pateræ. The whole thing is so curious in its mingled suggestions and reminiscences, half Classic, half Byzantine, that it is to be regretted the authors did not give some further information as to its position and probable origin. There is, however, practically no letter-press to the book, and no information about the examples, except that dates, or approximate dates, are given or suggested to many of them in the index. The Byzantine tablets from Rome and Torcello on plate 32, in which the design consists of a decorative arch, with a cross under it, are, like the Athenian example just referred to, very interesting from the architectural point of view. They are so much alike in design that they must have originally belonged to the same locality or have been even worked by the same hands. They form a curious link between Classic and Mediæval art. The surfaces of the crosses on them are decorated with the old Roman ornament of two strap forms interlaced so as to make a series of intercepted circles, but at the ends and junctions of the cross arms the two bands or straps are intertwined in a manner quite at variance with Classic feeling. On either side of the cross is a leaf which seems a last reminiscence of the Classic acanthus, a kind of mummy of it, with all the life and flow gone out of it, and on the extrados of the arch is a series of small scrolls springing out of the extrados moulding in a manner curiously resembling the Gothic gable crocket of later days. The various examples of crosses worked on the faces of upright stones, especially the Celtic ones in Scotland, the Isle of Man, and elsewhere, are full of suggestions in decorative design which might be worked out afresh with new detail. A great many examples are given of the form of equal-armed cross worked upon or into a circle, which is so effective in a decorative and symbolical sense, and has been treated with such variety of method and detail. Among other forms of cross delineated here we may notice the type of flat slabs cut out into crosses, of which the richly-decorated example at Kilklispeen, in Ireland, is one of the most remarkable (by the way, no indication or information is given as to whether this cross is or is not monolithic, but we presume it is); and another which is variously illustrated is the type showing a small cross on the top of a very long and thin stem. This is shown in several varieties; a Celtic one from Tuam; several from Gosforth, Cumberland; a country cross from Jouarre, in France, a very curious example, labelled early fourteenth century, and consisting of a thin round pole with a little quasi-Romanesque capital on the top (which, by the way, looks much earlier than fourteenth-century), and the cross on that. Is this a wooden or a stone cross? The texture of the drawing does not give any indication, and there is no note of this, so we presume it is stone, but it is a remarkably thin and long affair to execute in stone. A later one at Auvergne, but of the same general type, follows, and one from a church in Lincolnshire, with a crucifix and a curious little kind of section of a roof over it; and one from Tarragona, with a shrine and little figures on the top of the shaft, the cross and crucifix above. All these, differing in detail and coming from different parts of the world, show, nevertheless, the prevalence throughout Christian countries at one time for this peculiar form of monumental cross, of which, probably, many examples have disappeared, their slender proportions being such as to render them peculiarly liable to injury.

Of horizontal slabs, a number of most interesting and varied examples are included, some of them of great beauty of design; we may draw attention especially in this respect to the Early English examples shown on plate 110, and one of those from Wales (No. 2, plate 113). A considerable number of the Renaissance examples of monuments are given, though not the best available, with the exception of the tomb of Filippo Decio, of which there is a reproduction in the Florentine Court of the South Kensington Museum, and of which admirable drawings, by Mr. Oakeshott, were given in the *Builder* for June 21 and 28, 1884. The delicacy of the detail is hardly done justice to in the manner of illustration adopted here.

A good many of the late Renaissance tombstones, with their pretty and naïve little ornaments of vases in relief and cherubs' heads are given, interspersed with simple tombstones without any carving, but merely decorated by ornamental enrichments and by the manner of shaping the head. As this or something analogous is the only form of monument that the majority of persons can afford, a selection of examples and hints is of practical value; otherwise we should have said that the space given to them was somewhat disproportionate. The appearance of the urn in bas-relief on some of these reminds us that the urn form of monument does not appear in the book otherwise than as a sculptured adjunct in this way. The adoption of it gave rise to a fearful number of commonplaces; some of them, however, were as good as some of the other commonplaces of seventeenth and eighteenth century work given in the book; and the urn form has a certain claim to be recognised. It stands on just the same footing as the sarcophagus; it is the retention, as a monumental feature, of a form which was at first used for the practical purpose of holding the ashes of the dead; and if (as we have little doubt) cremation becomes the mode of burial of the future, the urn form of monument is likely to have a practical meaning again, and the consideration of its effective treatment, both in a symbolical and in a decorative sense, will become one of the frequent tasks of the designer of modern sepulchral monuments.

A SANITARY HITCH.

THE account given in our last number of the expenditure of nearly half a million of money in outfall works, for one side of the Thames alone, coupled with the evident uncertainty of purpose betrayed by the effort to keep secret a scientific report as to what these works are expected to effect (an effort which has been so far successful, though we perceive that Mr. Rider Cook intends to raise the question again), is a matter of very serious consideration for the ratepayers and residents of London. The outstanding loans of the various metropolitan authorities, at the end of the financial year 1884-5, amounted to 35,856,494*l.* Of this sum, which does not include the capitals of the gas and water companies of the district, 18,434,101*l.* is owed by the Metropolitan Board of Works, and 5,582,031*l.* by the School Board. The former, spending 920,000*l.*, draws from the rates 760,000*l.*, the latter 887,000*l.* per annum. The Metropolitan Board of Works have spent 6,346,892*l.* on main drainage and main sewers, a sum which it is now proposed to increase by probably another million. Their expenditure in 1885 on the maintenance of the sewerage and pumping was 75,886*l.*; to which 107,063*l.* was added for "sewerage experiments and deodorising," making a total of 182,950*l.* At the same time the Thames, according not to vague rumour but to the definite statement of naval officers stationed on the river, was worse last summer below London than it ever was before. It was as bad at Greenwich as it had previously been at Woolwich. Not only so, but a new feature declared itself in the river. Persons wrote to the daily newspapers with Thames water, which was at all events inky enough to allow of the letters being read and printed. Ink is probably the right word; for it has been pointed out, ever since the details of the present mode of treatment were made known, that a combination of iron and lime always blackened sewage effluent at some distance from the outfall, even when it appeared bright and clear in the first instance. This result of the 107,000*l.* spent in experiments is not encouraging. Nor does it by any means form a good argument for the patient waiting of the ratepayers while the Board consider a report that they will not allow to see the daylight.

At the same time, the Urban Sanitary Authorities have incurred an outstanding debt of 81,500,000*l.*; the Rural Sanitary Authorities owe 1,485,000*l.* The expenditure of the former in the year 1884–85 was 14,232,565*l.*, not defrayed out of loans, and 4,150,000*l.* out of loans. The expenditure of the Rural Sanitary Authorities, from both sources, was 497,000*l.* Nor are these Authorities less in the air as to any efficient sanitary measures than the Metropolitan Board of Works. To the present hour, when the Local Government Board exerts a pressure on the authorities of some dangerously unsanitary place, what is the first step taken in consequence? A deputation is appointed, consisting, for the most part, of wholly inexperienced persons, to go round the country and see what other people are doing. Time, no doubt, in one sense of the word, is thus gained; in another sense it is lost, and money too. In one instance, mentioned in our columns in the present year, the results of such expeditions and of the subsequent deliberations on them has been the expenditure of 90,000*l.* on outfall works for 11,000 persons, with the effect of producing an intolerable nuisance, freely commented on in the press and in Parliament. Such is the

present outcome of an expenditure of ninety millions sterling, together with an annual outlay of fifteen millions a year, an expenditure blindly, steadily, and rapidly increasing.

It is not the magnitude of the thing that alarms us; it is the inadequacy of the results obtained. Nor is it so much the actual inadequacy of these results in itself, as the want of any definite, systematic, business-like attempt to grapple with the subject by bringing into a focus all that is actually known. The concealed reports and the picnic visits are consistent parts of the same want of system. However anxious a sanitary authority may be to know which plan would be likely to suit them best, they are provided with no information on the subject. The Local Government Board will offer no opinion, and institute no inquiry, except for the purpose of sanctioning or otherwise an application for loan. The entire disconnexion of all sanitary authorities throughout the country is such as to confine the knowledge which may anywhere be obtained from experience to the smallest number of people, and to prevent it, as far as possible, from becoming public property.

We are not unaware of the manner in which this general and contented ignorance is fostered by that remarkable feature of our day, the advertisement system. No ill to which flesh is liable is without a cheap, ready, and certain cure, as per advertisement. If anything were needed to make confusion doubly confounded it would be this chorus of interested advice. We are not about to suggest any method of getting out of the difficulty. Not that we regard it as insuperable. If sanitary matters were taken up by the country with a patient resolve to get at the truth, and to fix and publish, step by step, the progress that is made, the matter would, we believe, be easy of attainment. But we do think it the duty of the press to call attention to the enormous and increasing expenditure; to the fact that expenditure is increased, perhaps more often than not, in the teeth of the definite knowledge of competent experts; and to the fact that one great and ever-increasing incense-cloud of dangerous and disgusting vapour is steadily ascending, most perceptibly as the temperature rises, from so great a portion of the island.

NOTES.

MR. JACKSON paid far too great a compliment to the agitation of a small clique of persons for the registration of architects, in making it the subject of a paper before the Architectural Association, who, as one of the members observed, would have been only too glad to hear him on some more interesting subject. With his general views we are in concurrence, though we think he underestimates the possible importance in the future of the examination for entrance to membership of the Institute of Architects, and the meritorious efforts which the Institute has recently made to render membership of its body in future something like a pledge of professional proficiency in that department of professional knowledge which can be tested by examination. However, Mr. Jackson upheld the artistic standard in architecture, and for that, at least, we thank him. His paper afforded an opportunity for the promoters of the "Bill" to advertise themselves afresh, and to receive some compliments on their "honest intentions," concerning which we will only say that people are to be judged in such respects by their actions rather than by their professions; that those who believe in the disinterested aims of persons who commenced operations by sending round among the profession a printed statement that they represented the Institute and other societies which had categorically refused to have anything to do with them, must be very simple-minded and charitable people indeed; and that the idea of the social status of the profession being raised in this kind of manner is too grotesque for comment. We observe that the promoters of this Bill have been asking, through our advertisement columns, for subscriptions in aid of their project. With their business relations with the publishing department of this journal we do not interfere, but we hope no one will be foolish enough to throw away any money in response to their appeal. As one example of the degree to which registration may be expected to raise the standard of architecture, we may mention that we were offered the other day an illustration of a new building by an architect whose name has figured among the promoters of this proposed Bill (not one of the signatories to the advertisement), which, though it was in other respects our interest to publish it as an illustration of a building likely from circumstances to be talked about, was such a wretched design that we felt we could not discredit our pages with it, and preferred to decline it. The argument is hardly any better in regard to mere constructional matters. The worst constructional disaster of this age,—the worst, perhaps, of which we have any record in English history,—was the fall of the Tay Bridge. This was unquestionably in great part the fault of the engineer, who practically confessed as much in the most pathetic manner, by dying of a broken heart; for that, we believe, was about the truth. But what possible Registration Act could or ought to have kept Sir Thomas Bouch out of the engineering profession? He could have passed any examination; he did a great deal of good work; but he for once unhappily took his responsibilities too easily, and he and others paid a fearful price for it. The remedy for such disasters is in a higher and stricter sense of responsibility among engineers and architects, and you cannot secure that by Act of Parliament.

CONSIDERABLE alarm, we are told, has been excited in the North of England by visits that have been recently paid by members of English ship-building firms to Spain, and by the opening of negotiations for the purchase, on the banks of the Bilbao river, of sites for the establishment of ship-building and marine engine works. Assuming the truth of these accounts, as at least showing that there is something in the wind, the gravity of the indications they offer can hardly be exaggerated. In the movements that have already taken place, transferring the centres of production from inland towns to seaboard or river-served towns, the great difference between the cost of land and water carriage has been put forward as a satisfactory reason for the change, great as has been the sacrifice of capital involved. We have ventured to ask whether, if these great industries once took wing, it was so certain that it would be on our own seaboard that they would always alight. In the case of two very important businesses the sea, it appears, is about to be crossed. The addition of a ship-building movement to that already noted as to the cotton industry and the manufacture of artillery is an unwelcome feature in the case. It is all very well to lay the blame on the trades unions; indeed, there can, in our view, be no question that the measures adopted by many of these bodies with a view of keeping up the rate of wages have had a directly opposite result. But the real source of difficulty and of danger lies lower. Trade-union restrictions are rather symptoms than original causes of the difficulty. The true origin of the trouble is the fact that as the productions of a country where the rate of living is, from climatic causes, necessarily high, meet with unchecked competition from the productions of those countries where it is low, the first may be gradually elbowed from the market; and the true point for the investigation of impartial and clear-minded statesmen is, whether in the measures that have been taken of late years for reducing the price of certain elements of the cost of living we have not been actually placing our own producers more and more at the mercy of their foreign competitors.

WE have not space for more than a line or two of reference to the temperate, clear, and judicious paper, by Sir Juland Danvers, on the "Defects of English Railway Statistics," read before the Royal Statistical Society on Tuesday evening last. It is seventeen years since Sir J. Danvers turned his attention to the working out of the average receipts and expenses per passenger and per ton of goods per mile. He is now able to state that on the East Indian lines last year each passenger was conveyed at the cost of about 0·82 pie, or, at the present rate of exchange, of 1s. 6d. per rupee, a little more than three-tenths of a farthing per mile, at a profit of about seven-tenths of a farthing; and each ton of goods was conveyed at the cost of 2·15 pies, or about eight-tenths of a farthing, at a profit of one and four-tenths of a farthing. The Statistical Society can render no better service to the country than by exerting its influence in pressing on the Government that powers should be given to call upon railway companies of the country to keep and to publish such accounts as have been long and vainly demanded by the professional authorities cited by Sir Juland Danvers.

WE are glad to learn from the last issue of the *Classical Review* (i., 10) that there is every hope that something like systematic excavations under English auspices will be undertaken in Cyprus. Archæological, like other duties, begin at home, and it is better that we should gather in the harvest of our own island, where we have not to cope with the difficulties of Turkish firmans and political jealousies, than expend our efforts further a field. Not long ago we called attention to the remarkable results of a tentative exploration of the site of ancient Marion (Poli-tis Chrysokhou), the two unique vases, — the Œdipous lekythos and the Pasiades alabastos. These have happily now, as we learn from the same journal,—an invaluable medium for archæological news,—passed into the keeping of the British Museum. It is the success of this excavation that has "at last goaded the British public into action." At the last meeting of the Hellenic Society it was decided to appeal to the public for subscriptions. The Oxford and Cambridge travelling studentships are to be turned to account in connexion with the work. The sanguine *Review* hopes that the Government will make a special grant.

THE *Berliner Philologische Wochenschrift* (Dec. 10) reports the accidental discovery, in the island of Cos, of some sculptured remains, which point plainly to the site of the once famous temple of Æsculapius. An altar has been found, and a marble snake, the sacred attribute of the medicine god. It will be remembered that Strabo (book xiv., c. ii., *et seq.*) gives an acconnt of this temple well calculated to excite archæological curiosity. It was, indeed, as we know from many sources, only third in importance to those of Epidauros and Athens. Strabo says:—"In the suburb [of Cos] is the celebrated Asclepieion full of votive offerings, among which is the painting of Antigonus, by Apelles. It used also to contain the 'Aphrodite rising from the Sea' (Anadyomene), but that is now removed to Rome." He goes on to say that Hippocrates learned much of his medical lore by studying the inscriptions engraved in the temple recording cures wrought there. It is true the two chief works of art mentioned by Strabo are pictures which must in any case long ago have perished; but then, who knows how many of the "votive offerings" and the medical inscriptions are yet below ground. The excavation of the Asclepieion at Athens recently yielded a rich harvest, but there is much as to the details of the cult and ritual of Æsculapius still to learn. It is not reported yet whether the site is to be systematically excavated.

COARSE-GRAIN pit sand is well known to be more suitable material for making concrete than river sand, and owing to difficulty in obtaining the former a French concrete-maker has devised a machine for separating sand from ordinary earth by washing. The apparatus consists of a copper cylinder 3 ft. 3 in. in diameter. It is pierced with holes of varying size, the smallest being at the top and the largest, about 2¾ in. in diameter, at the bottom.

The shaft on which the cylinder revolves is hollow, and through it water circulates under pressure, escaping into the cylinder through holes provided for the purpose. Hydraulic power is used for turning the cylinder at the speed of one revolution per minute. The earth is introduced at the top of the cylinder, where the smallest holes are situated, and there is an internal screw which causes it to travel through. In this way the materials of varying coarseness are separated, falling into suitable receptacles below, and are set apart for their respective uses, the coarsest being used for road-mending or concrete-making. The water escaping carries off fine sand and vegetable earth, and is run into one of two troughs in which it is kept stirred by revolving blades. The fine sand is gradually deposited, and the water, holding vegetable matter in suspension, passes to a series of basins in which the earth is deposited, and finally flows away to the river. The fine sand is used for the cement-mortar, and the *humus* is in demand for agricultural purposes. A plentiful supply of water is necessary for the successful working of the system, but in the case under notice its use has led to a considerable reduction in the price of cement pipes, together with a better quality. An account of the working of this machine may be found in the "Mémoires de la Société des Ingénieurs Civiles" and in the "Proceedings of the Institution of Civil Engineers" for the present year.

DR. FRANK, of Charlottenburg, has recently given some interesting facts relative to the use of magnesia salts in place of plaster of Paris. Large quantities of potash are manufactured at Stassfurt, and magnesia salts are produced as a by-product. The possibility of finding some useful field for this has for some time occupied the attention of those interested in the industry. It was known that a mixture of chloride of magnesium and magnesia would produce a cement, but it was not found a practical success owing to the tendency to swell and blow, common to calcareous cements. Dr. Grundmann, of Herschberg, has, however, recently introduced a process which promises to relieve the overburdened potash manufacturers of some of the troublesome by-product. The magnesia is calcined and carefully slaked, and the casting made from it is afterwards exposed to the action of carbonic acid gas. The result is much the same as when a coke fire is made up in a room recently plastered in order to harden the material, as the coke fire also creates carbonic acid gas. There is a natural carbonate of magnesia, known as magnesite, which is of great hardness and density, taking a good polish. The material produced by Dr. Grundmann's process resembles magnesite in these respects. The magnesia can also be used for cementing, and in this way an artificial dolomite is made when combined with marble, or it can be used by builders as a stucco. Further particulars may be found in Glaser's "Annalen für Gewerbe und Bauwesen."

THE results of some German experiments, made by Herr J. Bauschinger, to give information on the elasticity and strength of the wood of larch, pine, fir, and deal, have rcently been published. The tests were made on pieces taken from stems 13 ft. 1½ in. long, cut off 1 mètre from the ground. A large number of experiments were made, the following being some of the chief conclusions arrived at. Crushing strength and density vary with the degree of moisture; bending and crushing strength form the best basis for estimating the quality of the timber; the bending strength is greatly influenced by the nearness of branches to the critical section; the modulus of elasticity and the bending and crushing strength are connected by some law, which can probably be represented by a simple linear equation; where the rings of growth have the same breadth in various samples, those with the greater proportion of summer growth are the stronger. The connexion between the crushing strength and density may be approximately represented by the formula, $B = 1{,}000\ \delta - 100$, where B is the crushing stress in kilogrammes per square centimètre, and δ the density. These tests are quoted in the "Proceedings of the Institution of Civil Engineers," vol. lxxxix., p. 5.

"LA NATURE" gives some particulars communicated by Mr. H. Bonnami of an apparatus for testing the setting of lime and cement. It consists of a tube having, at its lower end, a flange which rests on the piece tested. On one side of the tube is a set screw, and inside it there is a rod, attached to the lower end of which is the needle by which the test is made. This needle is 1·180 in. long, and has a cross sectional area of 0·0015 square inch, or one square millimètre. On the upper end of the rod is a table upon which zinc discs, each weighing 1·76 oz., are placed to the required number. The rod weighs also 1·76 oz. On the side of the rod opposite the set screw there is a notch, the upper surface of which forms an inclined plane. Against the latter the end of the screw presses, and it will be obvious that the rod may be raised or lowered in the tube by turning the set screw either one way or the other. The setting of the cement is shown by the weight required to cause the needle to penetrate a certain depth, the latter being registered by a scale on the upper part of the rod. The instrument is described in the "Transactions of the Institution of Civil Engineers," and in the original communication in *La Nature* tables were given showing the difference in the progress of the setting of various products.

THE measured drawings and studies submitted for Col. Edis's prize for "the best series of measured drawings and sketches of any buildings in Great Britain and Ireland, of any style of architecture current between 1600 and 1800," has only been responded to by three competitors, whose merits, however, seem on the whole pretty evenly balanced, though we do not question the decision arrived at in favour of Mr. Greenslade's set. We understood from the terms in which Col. Edis announced, at a meeting one evening, his intention of offering the prize, that his idea was to make a practical protest in favour of measured drawings as against picturesque sketching, and therefore we were surprised to find perspective sketches included; but these appear to be secondary to the measured drawings, which in all the three sets seem to have been carefully done, and are, moreover, very neatly and effectively drawn without losing practical clearness. The author of the premiated set has taken the old Exeter Guildhall as his principal subject. The sketches by the late Mr. Devey, which have been hung at the Institute, are beautiful examples of picturesque sketching, getting a great deal of effect by a few broad washes of colour here and there on a toned paper. In the Arbitration Room have been hung the drawings submitted for the special Travelling Studentship in connexion with the Archæological School at Athens. This, as elsewhere mentioned, has been awarded to Mr. R. Elsey Smith, whose drawings seem to show a fitness of things in the selection, as he alone exhibits drawings of Greek detail sketched on the spot, and also shows by one or two drawings from casts of figures and busts that he is equal to making a satisfactory drawing of a bit of antique sculpture, which may be of practical advantage, or even necessity, in work in connexion with the School at Athens.

THE best portion of the Exhibition of the Society of British Artists, in Suffolk-street, is in the first two small rooms, among the water-colours, where there are a good many very nice things, mostly small and slight, but interesting and original; among the larger and more finished works is a fine and solid, though rather loaded, drawing by Mr. Bernard Evans, of "Bolton Abbey from the Moors" (28). There are two noteworthy drawings by Mr. Fraser, "Barling Gap, Sussex" (173), and "Brighton Trawlers" (93); in the latter the craft are plunging through and throwing up the water with great vigour, but the artist has not got the surface and transparency of water, —only its movement. As to the large room, it contains a few good things amid a number of works either hopelessly mediocre or ostentatiously eccentric. The "Birth of Venus," by "Mr. William-Stott of Oldham," as he chooses to be called, is a mere monstrosity; and we cannot but wonder that Mr. Arthur Hill, who can paint the figure well, as shown in his "Young Slave" (240), should be content to exhibit in a gallery where such a production as this "Birth of Venus" is given a central and prominent place. Most of the things which are out of the run of commonplace are absurd eccentricities,—clever sometimes, but not worth going to an exhibition to look at, certainly not Mr. Whistler's scratches (we cannot call them drawings) which are hung on the stairs. The staircase and entrance have been treated as a "symphony in white," and look very well, but that only makes the greater part of the interior contents of the rooms the more disappointing.

WE frequently hear that very queer appointments are made to Surveyorships of Local Boards and Sanitary Authorities, and a query we have received this week seems to indicate that this idea is founded on fact. A correspondent writes to us on the headed paper of a certain provincial Highway and Sanitary Authority, under the signature of "Nemo," but with his name on the corner of the paper and "C. E." after it, to ask us to "give him the formula" for calculating the cubic contents of an apartment, which is a simple parallelogram with a semi-octagon bay at one end of it and a semi-circular bay at the other: heights figured. This problem seems to be too much for the "C. E."! People who are so ignorant of their profession have no right to trouble a journal with "problems" which they ought to have been familiar with in their pupilage; and if "Nemo" asks us any more questions of the kind we will give him an answer, but we will give it with his name and address. In the present case we merely tell him that he will find the "formula" for the area of a circle in any primer of geometry, and he had better get one and improve his education; the rest of the matter, of course, does not even require a "formula." The question is, how did this gentleman come to be in a position to have his limited knowledge put to such exacting tests?

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fourth ordinary meeting of the present session of this Institute was held on Monday evening last, Mr. Edward I'Anson, F.G.S. (President), in the chair.

The Edis Prize, Drawings by the late Mr. George Devey, &c.

Mr. J. Macvicar Anderson (Hon. Sec.), announced the winner of the Edis Prize to be Sidney K. Greenslade, of 42, Ockenden-road, Islington. He further intimated that the Studentship of 50*l.* instituted by the Committee of the British School at Athens, with a similar sum added by Mr. I'Anson, had been awarded to Mr. Ravenscroft Elsey Smith, son of Professor T. Roger Smith.

Mr. Macvicar Anderson also pointed out that on the screens were to be seen two different sets of drawings of great interest and excellence. One set had been executed in the South of France by Mr. Needham Wilson, Soane Medallist in 1886, and to whom the Council had awarded the money premium connected with the medallion. The other set consisted of sketches by the late Mr. Devey, lent by his executors for exhibition. These were of great interest not only from the fact that Mr. Devey was no longer with them, but also from their intrinsic beauty and artistic excellence.

Proposed Art Exhibition at Munich.

Mr. Macvicar Anderson then read the following letter, addressed to the Secretary of the Institute:—

"Foreign Office, Dec. 15, 1887.

SIR,—I am directed by the Marquis of Salisbury to state to you, for the information of the Royal Institute of British Architects, that his Lordship has been informed by the German Ambassador at this Court that, with the support of the Bavarian Government, the third International Art Exhibition will be opened at Munich from

the 1st of June next until the 3rd of October, and is intended to celebrate the hundredth anniversary of the first Art Exhibition held in that capital. His Lordship is informed that this Exhibition is under the patronage of H.R.H. the Prince Regent of Bavaria, and, as it is specially desired to obtain the co-operation of foreign artists, with the view of enhancing its interest, he has been requested to make it known to British artists.

I accordingly enclose you copies of the programme and regulations of the Exhibition, in order that publicity may be given to its objects, and am to request you to inform me what prospect there is of British artists taking part therein.—I am, Sir, your most obedient humble servant,

(Signed) JAMES FERGUSSON."

Mr. Anderson added that an answer would be sent to the effect that the Council would have great pleasure in giving publicity to the communication, with a view to British architects taking part in the Exhibition.

The Recent Development of the City of Vienna.

Mr. Frederic R. Farrow (holder of the Godwin Bursary) then read a paper on "The Recent Development of the City of Vienna," of which the following is an abstract:—

The author commenced by describing the separation between the City of Vienna and its surrounding town by a system of fortifications existing previous to 1857, and the proposals made to remove the separation, leading to the decree of the Emperor, issued Christmas, 1857.

Decree of the Emperor.—This decree provided for the removal of the fortifications, the appropriation of the area partly for open spaces, partly for sites of public buildings, for the formation of a boulevard round the city and a quay next the Danube Canal, for the sale of surplus land to form a fund from which were to be erected numerous public buildings, and for the promotion of a competition for designs of the proposed scheme.

Carrying-out of the Decree.—The competition was held, an official plan subsequently prepared in the Office of Works of the Ministry of the Interior, and the work commenced. The Stadt Park, the Palace Court, People's Garden, Rathhaus Garden, and the Place in front of the Votive Church laid out as open spaces. The building fund was established by the sale of surplus land at prices ranging from 150,000*l.* to 300,000*l.* sterling per acre, from which was defrayed the cost of erecting public buildings on the Ring.

Museum of Applied Art.—Erected for the purposes of a Museum and Technical Art School during the years 1868-71 from the designs of the late Freiherr von Ferstel, Royal Gold Medallist, at a cost of 65,000*l.*

Cur Salon in the Stadt Park.—A building used as concert-room and *café*, designed by J. Garben in florid Italian Renaissance.

Opera House.—Was the first public building erected on the Ring, having been built during 1861-1868 from the designs of Vander Nüll and Von Siccardsburg, at a cost of 500,000*l.*, for the accommodation of an audience of 3,000 persons.

Academy of Fine Arts.—Facing the Schiller Platz, designed by Baron von Hansen, and erected in 1874-76. Contained galleries for casts and pictures, library and reading-room, and accommodation for students of architecture, sculpture, painting, and etching.

Museums of Art and Natural History.—These twin museums, intended to form, with the Imperial Palace now in course of erection, one grand conception, from the designs of Semper and Hasenauer, were commenced in 1872 and completed in 1884.

Houses of Parliament.—In Classical Greek style, designed by Baron von Hansen, consisted in the main of a one-story building on a basement, and provided for a House of Peers and a House of Representatives, with the necessary offices, &c.

Rath-haus.—Designed by Freiherr Friedrich von Schmidt, Royal Gold Medallist, whose plans were selected in open competition. Erected in 1872-1884, in Modern German Gothic style, with an admixture of Renaissance features. Included a grand ball-room, 12,000 ft. superficial area and 45 ft. high, with its attendant supper-rooms, salons, &c., a council chamber and municipal offices.

University.—The buildings contained forty-six lecture-rooms for 6,000 students in the faculties of arts, laws, medicine, and theology; three large halls for festive occasions; examination-rooms, and a fine library, on the model of the Ste. Geneviève at Paris, for 32,000 volumes and 520 readers. The buildings were designed by Baron von Ferstel, commenced in 1874, and completed in 1885.

Court Theatre.—Designed by Semper and Hasenauer in florid Renaissance, thus contrasting with the other buildings in the same group,—the Houses of Parliament in Greek, the Rathhaus in German Gothic, and the University in severe Italian Renaissance.

Ring Theatre and its Commemorative Building.—On the site of the Ring Theatre, destroyed by fire, 8th December, 1881, *Das Kaiserliche Stiftungs-haus* had been erected, from the designs of Baron von Schmidt. This building contained a commemorative chapel and suites of residences in "flats." These latter were especially noteworthy, as showing the latest phase of feeling in Vienna in respect to such domiciles, the rooms being for the most part entered directly from a vestibule or corridor, a distinct departure from earlier types of plan, in which the only means of access to many of the apartments was by transit of other rooms.

The Bourse.—Designed by Baron von Hansen, and erected in 1870-1875 at a cost of about 350,000*l.* The great hall, of basilican form, 195 ft. by 130 ft. in extreme dimensions; offices for bankers and stockbrokers, a corn exchange, &c.

Hotels on the Ring.—The Grand Hotel, on the Kärntner-ring, with 300 visitors' rooms; the Hotel Imperial, also on the Kärntner-ring, formerly the Palace of the Duke of Württemburg, and the Hotel Austria, on the Schottenring, each with 150 rooms, and the Hotel Métropole, on the Franz Josef's Quay, with 400 visitors' rooms.

Palace of the Grand Duke William.—On the Park Ring, overlooking the Stadt Park, designed by Baron von Hansen.

Houses in "Flats."—The "Heinrichshof," one of the largest in Vienna, situated on the Ring, and built from the designs of Baron von Hansen. The house "Zur Kugel," or Globe House, erected in the Hof, in the Baroque style prevalent in old Vienna, from the designs of Ludwig Tischler, combining *café* and *restaurant* with dwellings on the upper floors, planned on the most modern system, with the rooms entered from vestibules or corridors. House of Herr Neumann, in the Rudolfs-platz, with stone façade, an exception to the stucco generally used in Vienna. The "Arkaden-Häuser," near the Rath-haus, luxuriously fitted blocks of residences, with *cafés* and *restaurants* on the ground floor. A group in the Stadiongasse, also near the Rath-haus, planned on the older system of residences in "flats." The Schwarzenberg group, containing 100 dwellings in three blocks, also planned on the older system. The private house of the brothers Böhm, in the Maria Lilfer-strasse, with the ground floor arranged for shops and small residences for letting, and the third floor also arranged for letting. The Commercial Bank, a combination of business premises and residences on the upper floors.

Other Developments of Vienna Architecturally.—The author briefly noted some of the churches of Friedrich Schmidt, the Brigittenau, the Weissgärber, the Lazzaristen, and the octagonal planned and domed Gothic church in Fünfhaus.

Mr. Thomas Blashill, Superintending Architect to the Metropolitan Board of Works, next read a short paper on the subject of "Architectural Design in Viennese Buildings." He commenced by referring to the drawings and photographs he had obtained during a recent visit to Vienna, which illustrated most of the important new buildings. A plan, prepared in the office of the architect to the municipality, showed the situation and surroundings of the city, which, as regarded latitude and altitude, only slightly differed from London. The climate, however, differed materially, and the general brilliant sunshine makes Vienna, to English eyes, first of all, bright. It could not be called a manufacturing or commercial city, but more the town residence of the Emperor and wealthy classes. In some of the suburbs were important villas, but the middle classes lived mostly in flats, in which accommodation was far more expensive than a house and garden in London. The working population occupied houses of some architectural pretensions, with rather high rooms, in which, however, they were closely packed. From an elevated point, near the beautiful "Volks garten," the chief of the new buildings could be seen: the Hof, or Court, theatre, now being completed by Baron von Hasenauer, sumptuous in design and decoration and open on every side; Ferstel's University, and his Votive Church; the Palace of Justice; the Town Hall, by Baron von Schmidt; and the Houses of Parliament, by Baron von Hansen. These names would be familiar to the Institute as those of past or present Honorary Corresponding Members. Following along the wide Ringstrasse were the two Imperial museums, and opposite to them the new palace of the Emperor was slowly rising. Blocks of private houses filled up intervals and formed backgrounds to the view. The new Opera-house, rather beyond the view, was a fine Renaissance building, possessing an auditorium very successful in respect to sight and sound. The grand church of St. Stephen was a rare ancient example of the Gothic style, but the Votive Church and the Town-hall were almost the only modern instances of Gothic in that area, the group of spires in the latter forming a picturesque feature above the horizontal lines of the general mass of buildings. The sober character of the great mass of Italian designs was striking. Doorways, windows, &c., seemed old friends of thirty years' standing, and, though specimens of good Renaissance were not wanting, there was little or nothing of the very "free Classic" which, in the interval, had flourished in London. The Houses of Parliament was the only instance known to Mr. Blashill of the successful use of the Greek style in a large and complicated design. In this work it was developed into life and beauty. The building was of greyish-white marble, and the interior richly designed in coloured marbles, adorned with figure sculpture and harmonious decorations. Figure sculpture was a striking feature of the new architecture of Vienna. It was very cheaply executed, and was employed in every situation in which the human figure could be placed in the exterior of a building, and also much used in interiors. The back elevation of the University building furnished a good example of external *sgraffito* work. In Vienna, it seemed probable that it would long retain its freshness. Terra cotta was used in enriched friezes and figure sculpture. Although much used, brick was seldom seen in the elevations of important buildings, much of the architecture being executed in cement upon a structure of brick. Stone was not the local building material, but good grey marble, reddish-white marble, and light grey limestones were obtained for important buildings, besides the richly-coloured marbles lavishly used inside the Houses of Parliament. Portland cement had been much used, but old work executed in a local plaster wore well, and this plaster was still used. The new improvements were the results of a grand combination of tact, talent, and business capacity, and were worthy of study. Having referred to the employment of women as bricklayers' and masons' labourers, Mr. Blashill concluded by expressing his thanks to Baron von Hansen, Baron von Hasenauer, and Baron von Schmidt, who had received him cordially, and rendered him much assistance.

Mr. William Woodward, in opening the discussion, said he had listened to Mr. Jackson's remarks before the Architectural Association the other evening to the effect that the history of architecture was mere antiquarianism, and that building operations were confined to the builder. He had also heard Prof. Kerr, in an eloquent and commendatory peroration, endorse to some extent the views laid down by Mr. Jackson.

Prof. Kerr protested that Mr. Woodward was not correctly stating what took place.

Mr. Woodward continued that he was, therefore, not surprised at the absence of the representatives of high art, and of artistic architecture, on the occasion of the reading of papers on the laying out of streets (a voice: "Query")? Mr. Woodward then went on to criticise the way in which the Metropolitan Board of Works laid out new streets in London.

Mr. Henry Dawson proposed a vote of thanks to both the readers of the papers. They were very much indebted to Mr. Farrow for the painstaking manner in which he had brought the different features of Viennese architecture before them. It would take too long to enter into a discussion of the details contained in the papers, but he believed they formed, taken together, one of the most useful contributions of the kind the Institute had had for some time past.

Mr. Arthur Cates in seconding the vote of thanks, said he considered the members were very much indebted to Mr. Farrow and Mr. Blashill. Mr. Farrow had had the advantage of visiting Vienna as Godwin Bursar, and it was to their respected friend, Mr. George

Godwin, that they owed a great deal of what Mr. Farrow had given them (applause). The result of Mr. Farrow's labours showed how great an advantage was to be derived by a young man from obtaining the Bursary so liberally and generously founded by Mr. Godwin. He was sorry, therefore, that on the last occasion on which the Bursary was offered there was no competitor for it. Whether that arose from the profound ignorance of modern languages which characterised the generality of the young men of the day, or from indifference to foreign ideas, he could not say, but the fact that there was not a single competitor for the Godwin Bursary was not creditable to the Institute or to the profession at large. They were especially obliged to Mr. Blashill, considering the high position he occupied, in devoting so much attention to what was being done in Vienna (applause). Thus that evening they were favoured on the one hand with the views of the student, and on the other hand with those of the mature official, highly placed. He believed, indeed, that London, which had suffered so much in years past from great neglect, would derive much advantage from the studies Mr. Blashill had so well made and put before them that evening. There was a curious parallelism between what had been done in London and what had been done in Vienna. About the year 1856 a great project was set on foot in London for what was called the Public Offices, and a very beautiful plan by a Belgian architect, he believed, was presented for reconstructing the district between Whitehall and Westminster Bridge. The result could be seen in the Foreign and Home Offices, and in the shattered scheme for the Admiralty and War Offices, which had been withdrawn in order that the old and somewhat wretched buildings of the Admiralty should be extended with buildings of a similar kind, while part of the site acquired for the Public Offices was to be sold as a commercial speculation to meet the cost. When they considered the expenditure on those Viennese buildings, they ought, as a nation, to be ashamed of themselves. The contrast between what could be seen in Vienna, Prague, Munich, Dresden, Berlin, and other Continental cities in the way of a wise expenditure for the improvement of these cities, and for the people's pleasure, and what was done in this country was very great indeed. He could not say that the Continental architecture was in all degrees perfect, but it did show much consideration for general harmony of composition, for outlay, and for liberality of conception. He knew of nothing finer than the great staircase of the University of Vienna, or the large hall of the Reichsrath, and the same principles governed the whole of the designs. The key to that was doubtless the fact that the architects were subjected to academic training, which might produce some hardening of the eye and hand, but which, at the same time, gave that idea of harmony and power of general disposition which was so important, but which unhappily so many English architects neglected. He did not know that our public bodies were so much to be blamed. The architects themselves had not the courage to lay down their plans with due regard to liberality of disposition, but were always overcome with the idea of economy, encouraging their employers to cover every inch of the ground, and especially so in London. As Mr. Farrow had shown, ground in Vienna was at least as costly as in London, and while house-rent was more than double, yet they were ready to make open spaces for the beautification of the city, and the benefit of the public at large. In London, and in England generally, in place of that wise and generous expenditure, every scheme was spoilt and blasted by what could only be termed a profligate parsimony and a wasteful economy. There was a curious parallelism also between Vienna, Paris, and London. The Ring Strasse of Vienna was constructed upon the site of the old fortifications. In Paris, again, the magnificent boulevards occupied a similar place. In London there were no boulevards, but about the year 1750 a scheme was set on foot for forming a new road from Islington to the City. In 1757 an Act was passed authorising the formation of the "New Road," which was now known as Marylebone-road, Euston-road, and the City-road, with an express provision that the road should be of a certain width, and that no buildings should be constructed within 50 ft. of the line. Any one who walked along the New-road of to-day would say that it was one of the most miserable examples to be seen in any great metropolis (applause). If its wretched shops could be cleared away, and the road restored to its original state it would be evident that a magnificent opportunity had been lost for placing public buildings along the line, and making a fine Ring Strasse. The opportunity had gone, and he only referred to it as a warning, so that in future care should be taken that no more of such buildings were erected on the western part of the thoroughfare, which had been saved by the fortunate intervention of the freeholder. London, at one time, had magnificent streets and open places, but in too many instances the buildings had been brought up to the edge of the road. He had been much struck, in successive visits to Vienna, with the development which had taken place there. Mr. Blashill had shown that the stucco used externally was not of an offensive character. Mr. Blashill had spoken well and truly of the respect in which the Baron von Hansen was held by his pupils. Some three or four years ago, when the Baron entered on his 70th year, it was the subject of general congratulation, and the period was marked by great festivities. The Academy at Athens, to which reference had been made, was a building of exceedingly pure Greek work, and its design and execution were of the highest character, while the marble masonry was, in accuracy and fineness almost equal to the best masonry in the Parthenon. Mr. Cates bore willing testimony to the extreme kindness and courtesy with which the Viennese architects received their brother professionals from England. Of all kind friends he had met there, the kindest was Baron von Hansen, who, old as he was, still devoted himself to the completion of the decoration of the Reichsrath.

Professor Kerr thought the discussion had gone into a very proper channel. They were indebted to Mr. Woodward for bringing it into that channel, and to Mr. Cates for the remarks he had made, but what they must bear in mind was this, that the authorities in this country could not exercise full powers over the architectural decorations of the metropolis. They, as architects, might fret under such a state of things, but when they considered that the Metropolitan Board of Works was under the control of the ratepayers, and Parliament the same, it was obviously impossible to achieve such works as were accomplished by Imperial Governments on the Continent. Public architecture did not flourish under a Government like ours, and he was afraid it never would except in this way. If they went through the City of London they would see many buildings which, with all their faults, constituted a series of works which were considered by foreigners to be exceedingly creditable to English taste and English enterprise. And it must be borne in mind that our system of architecture was different from any Continental system, relying, as it did, on individuality of design and effort. Whatever was done in this country was accomplished by the hive of bees working each one by itself. What was accomplished on the Continent was done by centralised power. This ought to be borne in mind, and they should take to themselves the credit of at least doing their own work in their own way, and in such a manner as to be considered honourable by those who were strangers. At the same time, it was well that the Institute should never cease to deplore the fact of the public authorities not being alive to the great principle that the decoration of a town "pays" (applause). What would France be without the liberal expenditure upon art which characterised her Budget every year? England had no Art Budget, and they, as architects, could not too often impress upon the public and the Government the great economical maxim that the expenditure of public money upon art was a beneficial expenditure for the nation at large, and a most profitable investment. (Applause).

The President said it was now fifty years since he saw Vienna, and six years since the first steps were taken to embellish and improve that ancient city. What had fifty years of comparative peace after twenty or thirty years of desolating war not done? It had not only affected Vienna, Paris, Brussels, and Berlin, but London also, and in spite of the shortcomings of our administrators and the little interest that was admittedly felt by this nation in art, he would ask what had not been accomplished in London? London was a fine city among the fine cities they had been talking about, and in spite of what had been said regarding the much-abused Metropolitan Board of Works, what finer work had been accomplished amongst the cities of Europe than the Thames Embankment, which had been carried out by that much-maligned Board? (applause). Some reference had been made to the satisfactory use of plaster on the new buildings at Vienna, and he might add that in some of the noblest works plaster had been very satisfactorily used. The Farnese Palace at Rome was plastered externally, the dressings being of stone. Many of the finest palaces at Genoa were plastered, and if it were applied as plaster, and did not pretend to be stonework, it might be satisfactorily applied even in the grandest buildings.

The resolution was then put, and carried by acclamation.

Mr. Farrow, in returning thanks, added that as an illustration of the enormous rentals paid in Vienna for a suite of rooms on a flat, one gentleman he knew, with a salary of 300*l.* a year, was paying 100*l.* for his rooms on the third floor of one of these buildings. The *sgraffito*, which was used somewhat largely in Vienna, was to a greater extent used in Buda-Pesth. Besides the numerous Bohemians who came to work in Vienna, large numbers of Italians also came, the latter being employed in masonry work.

Mr. Blashill also returned thanks, and bore testimony to the excellent practical information which Mr. Farrow had given them that evening.

The President announced that the next meeting, which would be a special general one, would be held on the 16th proximo, for the award of prizes and studentships, the work for which was to be submitted before the 2nd of January.

Mr. W. H. White (Secretary) announced that the Exhibition of Candidates' Drawings for Studentships, Prizes, &c., which would open on Friday, the 13th of January, at noon, would close on Saturday, the 21st of January, at four p.m.

The proceedings then terminated.

THE CONSTANTINOPLE MUSEUM.

Sir,—My report to the Chairman of the Palestine Exploration Fund (printed in your paper of the 10th inst.) respecting the Sidon sarcophagi has, I find, attracted much attention.

These monuments will be housed in the Museum at Constantinople when the additions to it are completed; and as I find that its existence even is very little known I think that a short description of its present position and that of the School of Art which is connected with it may not be uninteresting to your readers.

The Museum is located in the gardens of the Seraglio, and may be approached either by the tramway leading to St. Sophia or by water, the visitor landing at the quay under the old walls, which are there well seen.

A good opportunity is also thus afforded of seeing the well-known inscription upon them, the greater part of it being very well preserved.

The Museum building was formerly the Tchinili-Kiosk; in itself an object of interest as it is said to have been built A.H. 870 (A.D. 1466), and to have been the first monument erected by the Turks after their conquest of Constantinople.

It was repaired and embellished A.D. 1590, and is in a beautiful position, is very picturesque both externally and internally, and is very fairly lighted.

The collection is at present small, but comprises several objects of great interest. Amongst them may be noticed a marble sarcophagus splendidly sculptured with mythical scenes (Ariadne, &c.), and supposed to be of the time of the Antonines, a large collection of gold and other objects found by Dr. Schliemann at Hissarlik, and three terra-cotta sarcophagi found at Clazorneme, which are considered by the Director to be Assyrian. To me they appear to be more nearly allied to Greek art. These sarcophagi have no covers, but there is a fourth sarcophagus, not yet exhibited, which has a circular-headed cover.

The Museum possesses, also, one of the serpent heads of the famous bronze tripod in the Hippodrome and two bronze figures of

extreme beauty, though somewhat injured, and assigned by various authorities to the age of Polycletes and Praxiteles,—certainly before Lysippus. They are said to have been found at Tarsus. Of these and the other interesting contents of the Museum there is, unfortunately, no catalogue.

When I visited the Museum some few years since there was a very good one, drawn up in French by M. S. Reinach, from whose description much of the above is given. But this is now out of print, and no other has been issued, the Director waiting, as he told me, until the new objects from Sidon, &c., can be properly housed and classified. The absence of a catalogue and of any descriptive notices on the objects, together with the difficulties which are placed in the way by the attendants of making even rough sketches, seriously interfere with the utility of this otherwise very interesting collection.

In the same garden, equally well-placed with the Museum, is a school of art, to which his Excellency Hamdi Bey pays great attention, he being, I am told, encouraged in this work by the direct approval of the Sultan himself.

I went all over this school at the invitation of Hamdi Bey, who is anxious to make his work widely known, and to have the co-operation in it of European societies and lovers of art generally, by furnishing him with casts, copies of Transactions, &c.

There were at the time of my visit, I was told, 130 students of various nationalities,—no test of any kind being required. They were being instructed in separate classrooms in perspective, drawing from casts and from life, colouring, the elements of architectural design, and, generally, in all the work of an art school. The only objection as to the architectural work which I had to offer was that the teaching was altogether French as regarded the style of design, although the school had the beautiful forms and details of Byzantium at its very doors.

But this matter may be (and I trust will be) remedied, and the school then be of much benefit to native art. It certainly appears to have a very successful beginning.

T. HAYTER LEWIS.

Athenæum Club.

THE PROPOSAL TO MAKE ARCHITECTURE A CLOSE PROFESSION BY IMPOSING THE TEST OF EXAMINATION AND REGISTRATION.*

THE subject on which I propose to address you to-night is not one in which I have myself taken any pleasure, nor does it fall within the usual scope of those which are discussed by your Society, which has for its object the improvement of its associated members in that noble art to which we have devoted our lives. The proper subject for our habitual thoughts is not architects, but architecture; not ourselves, but our art; and I would much rather have talked to you about brick and stone, timber and marble, than about Acts of Parliament, registers, and examinations. But however much we may grudge the time which it is necessary to bestow on questions of professional practice, it is obvious we cannot afford to neglect such questions entirely, especially when they affect not only the personal well-being of architects themselves, which is or should be a very secondary consideration, but the actual well-being and progress of architecture.

Such a question is the one which I have chosen to speak about to-night. It is obvious that so sweeping a revolution as that by which what is now a free and liberal art, to the pleasures and honours of which all may aspire who can obtain employment, would be converted into a close profession like law, physic, and divinity, to which admission could only be obtained by apprenticeship, payment of fees, examination, and diploma, could not be effected without influencing for good or for evil the progress of architecture in the kingdom. It is, therefore, a matter which ought to be thoroughly considered in all its bearings, and from all points of view, both by those who follow architecture as a profession and by all others outside our ranks who value the progress of art among us. Nothing could be more disastrous than that such a radical measure should be hurried through Parliament and become law without any real certainty that it is desired by the public, or even by the whole body of architects; without any clear prospect that it would help to improve the architecture of the day, or even that it would not, on the contrary, fatally injure it; without due consideration for the case of those on whom the new restrictions would press with undeserved hardship; and, above all, without proper intelligence of the undoubted blessings of liberty from State or bureaucratic control which we should sacrifice. This thorough and impartial consideration the proposition has never yet received. The advocates of the measure have had their say, and have probably said all that is to be said on their side of the question. Those who object to it have been generally silent; the success of the scheme seemed to them unlikely, and the attempt to carry it out not dangerous; and they have consequently turned away with a feeling of security from the discussion of a question which, while it remained a mere question, was uninteresting to them. The time has, however, arrived when their views ought to be known, and the arguments against the proposed change ought to be listened to with equal attention to that which those of their opponents have received. It is for this reason, therefore, that I have chosen as my subject to-night "The Proposal to make Architecture a Close Profession by imposing the Test of Examination and Registration." It seemed to me also that the discussion which I wish to provoke would, with special propriety be begun by one, like myself, who is not a member of the Institute or any other architectural society, and who may therefore be regarded as in a special way able to look at the matter impartially.

The history of the scheme and its growth from a mere speculative idea into the concrete form of a Bill, which it was sought to bring into Parliament last session, is given briefly in the *Journal of Proceedings* of the Royal Institute of British Architects for November last. From that account it appears that the Council of that Society for 1859-60 reported that "the establishment of a system of compulsory examination, extended to all architects, whether members or not of this Institute, was considered desirable." The first step taken towards this end was the establishment of voluntary examinations of candidates for admission to the Institute, which, after some twenty years, became compulsory. The further extension of this examination is now seriously contemplated, and Mr. Connon, the author of a paper in the journal I have just cited, says that "should compulsory registration become an accomplished fact, the registering and examining authority should alike be vested in the Institute." Meanwhile, however, in the absence of any sort of coercion, it would appear from the same account that these examinations have not been attended by a great measure of success. From 1861-81, while the examinations were voluntary, the average number of candidates who passed annually was less than three; while, since 1882, when the examination for admission to the Society became compulsory, the number has risen only to twenty or thirty, although, according to one statement, no less than 400 students, on an average, enter the profession yearly. It is clear, therefore, that we are very far from the state of things contemplated by Mr. Connon under which the Institute would hold the keys of admission to the profession.

As a step towards the attainment of that object, it is now proposed that all the local architectural societies in the kingdom should accept the Institute as a common head, to which they should be affiliated, so that the parent society should stand to architects in the same relation as the Incorporated Law Society to solicitors and attorneys. But in spite of the analogy, this dignified position will not, it seems, be willingly accorded to the Institute by all those who promote compulsory registration, and it is from the dissentients that the first tangible scheme for closing the architectural profession has seen the light in the form of a Parliamentary Bill. Whether if registration were carried the Institute would have the management of it or not it is unnecessary to discuss here. I should myself agree with Mr. Connon that it would be the natural and most convenient plan; but this is only a matter of detail, and I wish to-night to confine myself to principles. Setting aside this point, the Bill, of which I dare say most of those in the room have seen an abstract, may be taken to give correctly in the main the nature and scope of the restrictions which it is desired to place on the pursuit of our craft. I propose to examine them in detail.

The Bill calls itself "The Architects and Engineers Act," but it includes surveyors also within its jurisdiction, and its object is to combine architects, civil engineers, and surveyors,—surely a strangely heterogeneous assembly,—into a close profession of which the members are to be registered after a qualifying examination, and of course payment of certain fees. After a certain date it is proposed that any unregistered person calling himself an architect shall be fined 20*l.* for the first and 50*l.* for each subsequent offence; that no public body shall give him any appointment; that his certificate shall have no legal value; and that he is to have no *locus standi* in a court of law for recovery of his professional charges. The only way to registration is to be in the first place by apprenticeship to a registered architect for a term in general of five years, and afterwards by examination. The term of apprenticeship is reduced to two years in the case of assistants of five years' standing and students who have passed the examination of the Institute or others like it; while assistants of eight years' standing are excused the examination, though one reads with surprise that even they are expected to serve an apprenticeship of two years beyond that time. Such is the outline of the Bill, which may be summed up in three words: registration, to which the avenue is by apprenticeship and examination.

Looking more closely at the details of the Bill one cannot but be struck by the unequal measure meted out to apprenticed pupils and assistants. The articled pupil may present himself for examination after five years pupilage, but the salaried assistant after serving five years must undergo two more as a pupil before he can do so. Now it is likely that before he became an assistant he had been some years learning his business in an inferior capacity, so that probably he would have undergone a probation of nine or ten years before, in the opinion of the framers of the Bill, he was qualified to offer himself for examination. But during these five years the assistant is at least as likely as not to have made better use of his time than the pupil, and it is simply unjust that the man who can afford to pay a premium should be floated into the profession at the end of the time, while, from want of a golden key, his poorer companion has to go to school again for two years more. This is a hard case enough, but what must we say to that of the assistant who is to be subjected to two years' apprenticeship after eight years' of service as a draughtsman, which probably implies twelve years or more of training for a profession to which the man with a premium in his hand may obtain admission after five years or less. If the final qualification is to be by examination, what need is there for the further qualification of apprenticeship? If an assistant or any one else can pass the examination, that ought to be enough. But this evidently is not the intention of the Bill, which proposes to adopt the restrictions of the old trade guilds and modern trade unions. Like them, it makes apprenticeship the only door of entrance, and as no architect in his senses would take pupils without a premium, their services being of little or no use even at the end of their term, the result would be that there would be fewer architects to share the same amount of work, and that poor men, however well qualified, would be left on the outside of the door, while a golden shower of premiums would fall on those who are on the right side of it. As the same fortunate persons are to have the sole right to hold public appointments, it is easy to see who would be the gainers and who the losers by the new state of things. Although the Bill professes to be drawn in the public interest, it is not our fault if it awakens that incurable suspicion with which we regard those who propose that certain privileges and advantages should be conferred on them because it will be for the public good that they should enjoy them.

The preamble of the Bill, however, boldly takes its stand on the ground of public interest. It runs thus:—"Whereas it is expedient that persons requiring professional aid in architecture, civil engineering, or surveying, should

* A paper by Mr. T. G. Jackson, M.A., F.S.A., read at the Architectural Association meeting, at 9, Conduit-street, on Friday, December 16, 1887, as elsewhere mentioned.

be enabled to distinguish qualified from unqualified practitioners, be it therefore enacted," &c.

This beginning would naturally lead one to suppose that the Bill emanated from the public, anxious to protect itself from incompetent practitioners. Nothing, however, can be farther from the fact. The scheme for closing the profession, and this Bill, which is the first outcome of it, are the offspring of architects; they come from within the profession itself and not from without, and this alone is enough to justify the outside public in regarding it with suspicion. The general body of mankind is, in fact, wholly in the dark about us; they neither know nor care whether we are organised into a close profession or not. I have even heard it said that nineteen men out of twenty, in a mixed company, if questioned on the subject, would be obliged to confess that they had never even heard of the Institute, a statement so nearly, if I may say so, bordering on profanity, that I should hesitate to repeat it had I not heard it from the lips of a member of the Council of that respected body. Nothing can be more complete than the indifference of the outside world to these plans for revolutionising our condition, except its ignorance of them.

There has not been the least sign that any one outside our own ranks is otherwise than satisfied with things as they are, unless it be Lord Grimthorpe, who wrote to the *Times* approving the idea of examination, but saying at the same time, that there was nobody among us fit to be examiner. To his support, such as it is, the promoters of the Bill are, so far as I am concerned, heartily welcome; but with this solitary exception, I know of no instance in which the public have given any sign that they require the kind of protection the Bill offers them; nor do I believe that if they had it they would attach the least importance to it. Had it been otherwise, surely the tentative and imperfect tests of qualification, which have been afforded by the examinations of the Institute would have attracted some attention. But who can recall an instance in which membership or non-membership of that or any other architectural society told to an architect's advantage or disadvantage? What employer ever troubled himself to inquire how many and what capital letters the architect whom he thought of employing could write after his name? On the contrary, it is notorious that an architect may reach the highest grade among his brethren, and, in the estimation of the outside world, without being a member of any architectural society, in proof of which we need look no further than the list of architectural members of the Royal Academy. Obviously, the public are wise enough to trust rather to their own eyes than to those of other people; they are content to judge architects as they do painters and sculptors by their works, and they find in them a better guarantee for good workmanship than would be afforded by any diploma or registered certificate of competency.

As to the protection against bad work which it is pretended the Bill would give, the public have already taken the matter into their own hands without any aid from us, by erecting an elaborate machinery of local boards, sanitary authorities, and district surveyors. If this machinery is properly worked, unwholesome and unsubstantial building ought to be impossible, and if bad work does manage to pass through such a sieve it would probably pass through any other that could be devised. If the surveyor does his business it is impossible for drains and soil pipes to convey sewer gas into houses, or for the construction, so far as the plans go, to be insecure, and any subsequent failure must be the result of bad workmanship or wilful negligence on the part of the architect or builder in carrying out the work. Against negligence, of course, no diploma is any protection. Whatever certificates of competency an architect may have it will not be enough that he should know how things ought to be done; the public will not rest satisfied with that, but will insist on seeing that he does it. No one can seriously believe that they will dismiss their local surveyors and shut up their Building Acts and By-laws as unnecessary when the world is supplied with a duly certified and registered body of architects. The regenerate architect, if ever he comes into being, will have to pass local boards and their surveyors just as we unregenerates have to do, and he will be very sanguine if he supposes his diploma will be of any assistance to him or will be regarded by the outside world as affording any security which would enable them to dispense with that of the Local Government Act. So far as public security goes, the proposed measure would add nothing to it; the present machinery is sufficient if properly administered, and if necessary its efficiency can be increased and its powers enlarged. Society may safely be left to take care of itself in this respect, and it is certainly no business of ours to undertake to defend it against ourselves.

In support of the scheme for closing our profession a great point is made of the analogy of other professions which are already closed. In the paper by Mr. Connon, to which I have already referred, we read, — "The demand is no new thing. It has already been granted by the State to the clergy of the Established Church, to military and naval officers, to members of the Civil Service, to physicians, surgeons, and apothecaries, to solicitors and barristers, to chemists and druggists, to dentists and veterinary surgeons, to metropolitan surveyors, to colliery managers, to certified teachers, to ships' captains and mates, and to steamship engineers." But the analogy sought to be drawn between these professions and our own craft is fallacious. Many of them have inherited their privileges and monoplies either from trade guilds and mysteries of the Middle Ages or from ecclesiastical usurpation, and cannot be said ever to have received them directly from the State. Others, again, like doctors and chemists, have to deal with matters of instant life and death, and it is clear that we have a right to feel sure that the man who serves us knows the difference between Epsom salts and oxalic acid. With a still larger number of cases, such as those of officers in the army and navy or the Civil Service, District Surveyors, and certificated teachers, we have absolutely no analogy at all, for all these persons are public servants paid by the State, and the public which pays has, therefore, a right to be assured that they are worth their wages before it engages them. In our case there is nothing parallel to this, for the State certainly does not engage to find a practice for those of us who prove, by examination, that we are competent to undertake it. Neither is our case analogous to that of the Church. The established clergy enjoy emoluments and immunities at the public expense, and some of their acts have a certain legal value. It is evidently only in virtue of these endowments and official duties that they are under State control, for in the case of other denominations which enjoy no such privileges there is no State control whatever, and any one who pleases is at liberty to undertake the office of minister without incurring any pains and penalties. So also in the case of certificated teachers, the Government interferes only where there is a question of receiving a grant of public money. Schools that receive no Government aid may employ uncertificated teachers if they please. The analogy attempted to be drawn between these cases and our own is entirely fallacious, but even if there were anything in it it would not be worth much as an argument unless we are prepared to invite the State to play a paternal part and close every profession that is now open for fear an innocent public should be imposed upon by incompetent professional men.

But it is time to point out that the Bill offers no sort of protection against the worst kind of building that goes on in our midst. It only aims at preventing people who do not know how to build calling themselves architects, a matter which need not trouble us very much, and it leaves the "jerry-builder" unharmed so long as he does not offend our respectability by ranking himself as one of us. There are, of course, bad architects in the world, but there are few of them who do not know how to build houses that will stand, and be wholesome to live in. It is not, so far as I have observed, in their buildings that the evils occur which are generally complained of. I remember a case where, after a family had lived a few days in a new house, all the drains were mysteriously choked up, and where, on examination, it was found that the leaden soil-pipe was carried into the ground and the end turned up and closed without any pipe drain from it at all; but this house was one of a dozen or so built by a speculative builder without an architect. I remember another case in the present year where a house fell down, which proved to have been designed, not by an architect, but by a plumber. And let it be observed that with cases like these no Registration Bill would interfere. Let the builder call himself a builder, and the plumber a plumber, and they would incur no penalty. If they avoided the sounding title of architect they might go on designing and building these filthy and insecure habitations as long as the District Surveyor let them. To make the Registration Bill efficacious it would be necessary to insist on the employment of a registered architect on every building that is put up. This would be protection indeed with a vengeance, but though it is difficult to regard it seriously, I observe in the same journal to which I have more than once alluded that one gentleman actually suggests that local authorities should be required to condemn plans prepared by any other than a properly-qualified architect.

Here at last we seem to have the *reductio ad absurdum* of the whole scheme. It begins by shutting the door against all but those who can afford to pay the preminm of apprenticeship, and having thus limited the number of architects to a fortunate few it proceeds to sweep into their net all the building operations of the kingdom. Surely the wildest imagination can go no further, and may well rest satisfied with the glorious prospect of such a good time to come.

Before leaving this branch of the subject it is necessary to notice one strange argument, I must, I fear, call it a selfish argument, in favour of making architecture a close profession. It is supposed that in some mysterious way the social status, as it is called, of the profession would be thereby raised,—an idea which embodies a sort of complaint that architects are not thought of as highly as they deserve.

Now, even if it were true, I must object that this is an unworthy argument, which we ought to be the last persons to employ. But I believe the complaint to be wholly unfounded; there seldom was a time when the calling of an architect stood higher in public estimation, certainly there never was a time when so many young men of higher culture and superior position flocked into it. Among people of educated taste it seems to me that architects and their works receive quite as much attention and commendation as they deserve; and I am far more afraid that our profession will become fashionable than that it will be despised. But however this may be, it is certain that it will gain no additional respectability from the Registration Bill, nor will those who now think themselves too low on the social ladder find themselves raised by a single step if that Bill becomes law.

Setting aside, however, this Parliament-made gentility, which may be left to dazzle those who fancy it, and the more solid advantages of loaves and fishes, which the Bill is to confer on the new profession,—setting aside, in fact, architects themselves altogether,—let us turn to the far more important question of what the revolution will do for architecture.

The object which its promoters have in view is thus stated by Dr. Connon. He says, "That the largest proportion of the profession are as well educated and as highly trained as they would be under an Act of Registration is probably true. What is sought is the exclusion of those who sink far below the standard which should be the lowest level of fitness." It is intended, therefore, that the unworthy should be shut out by the test of examination; but nothing is said of the exclusion of those who, for want of means, are unable to undergo the compulsory apprenticeship which the Bill requires, whether they are able to pass the test of examination or not.

This condition would have the effect of narrowing the field to those who can afford to pay for entering it, and there would certainly be no gain to architecture in this. Every one must know of cases of men who have risen from assistants into architects and done excellent work, though they have never gone through a regular pupillage, and who would have been lost to the profession had the proposed Bill been in force.

But we are told, further, "that the profession of architecture would benefit greatly by the universal education of its followers which would follow from legal registration." And this brings me to what is, perhaps, the most misleading of fallacies, and one which seems to underlie all that has been written and said on the side of registration, namely, the confusion of examination with education.

Now, there are several ways of employing

examination. Students may be examined by their teachers with a view of seeing whether they have properly understood what they have been told, and of correcting any misapprehensions they may have fallen into. That kind of examination is itself a means of education, and is both useful and necessary to the student, who might otherwise be a long while in discovering his mistakes. It is obvious, however, that the examination for admission to a profession is not of this kind. There is another kind of examination like that at our old Universities, which are both teaching and examining bodies, where the teachers are also the examiners, and do in a manner review in the University schools the result of the University curriculum. This kind of examination is less educational than the other, and many University teachers of the present day advocate the abolition of University examinations as the best thing that could happen for University education. Clearly, however, the examinations at Oxford and Cambridge have little in common with that we are considering. The third type of examination is that for admission to the public services by examiners who have had nothing to do with the education of the candidates, but simply admit or reject them according to their success in answering a certain number of questions. This kind of examination has been adopted in dealing with public appointments, less for the sake of guaranteeing the efficiency of the public servants than for satisfying the people that Government patronage is fairly and impartially distributed. Such examinations are perhaps necessary, but, if so, they are necessary evils; it is obvious they are of no educational value to the student like the first kind, nor do they enable him to gauge his own knowledge like the second kind; they do not follow at the end of a long course of study directed by the same body which conducts the examination, and which therefore knows how to bring out and sift the knowledge of the candidates; they must therefore be general and superficial, taxing the memory rather than the intellect, and they often degenerate into something like a game of skill between the examiner and his victim, in which luck and accident play not the least part.

It is to this last class of examinations that ours would inevitably belong, and I can conceive nothing more likely to divert the studies of architectural students into unprofitable channels, or to put before them a wrong object for their efforts. To work with the object of passing a board of examiners is a very different thing from working to acquire knowledge. The object is not education, but a diploma; and the man will read, not to clear up his own ignorance and fill up the gaps in his knowledge, but to prepare himself with such scraps of information as may come in usefully and help him to fill up his examination paper. Cram, with all its hateful parody of real teaching, would become the order of the day. We should have superficial text-books by the dozen to save the student the trouble of thinking and searching for himself, and to give him just that kind of smattering which would pass muster with the examiners, without planting in his mind any germ that might afterwards grow up into accurate and scientific knowledge. Independence of thought and freedom of research are impossible under such a system, and without these nothing original can ever be produced. The question with the student would be, not "what do I most want to know?" but "what will pay best in the examination?" That this is the result of the system of examination for the public service is too notorious to be questioned; cramming has become a lucrative profession, and has created a special literature of its own, which all sound scholars would wish to put on the fire back. It is only too certain that the same effect would attend the establishment of a qualifying examination for our own calling; it is the merest fallacy to suppose that it would be an educational measure, and its actual result would be that real architectural education, so far from being promoted, would be positively obstructed.

But a greater difficulty than ever presents itself when we come to the subjects which intending architects are to take up. A formidable list is given in a collection of papers on education read at the Conference of Architects last summer, for a copy of which I am indebted, I believe, to Mr. Cates. It ranges from mathematics in its highest branches to the history of architecture in all ages and countries, freehand, linear, and perspective drawing, experimental mechanics, heat, optics, acoustics, electricity, with laboratory practice in all; then follow chemistry, also with laboratory practice; and languages, either French or German, or both. All this we are told is comprised in the first year's course of an architect's training in America, and we can only wonder at the astounding powers of digestion which an American architect enjoys if he can get any nourishment out of such a surfeit of good things.

But the most surprising thing, after all, is that in all this magnificent programme for an architect's studies, architecture itself is forgotten. The student may bring up for examination a pitiful smattering of the great sciences I have enumerated, which is all he can hope to acquire in so short a time, and which he will do well to forget as soon as he can for fear it should lead him into danger, and he may show that he knows something of the various styles of architecture of other ages and of all countries, which is, after all, a matter rather of antiquarianism than of art. He can also be examined in the elements of construction; he can be asked how he would lay his drains, how he would warm and ventilate his rooms, how he would roof over an irregular space, how he would construct a vault or a spire or a dome, or any other part of a building. But all this is not architecture; this is but the builder's art. Architecture begins after all that; it assumes that the building is well planned and constructed,—*tout cela va sans dire*,—and then it steps in and makes it artistic and beautiful. But this is an intangible operation that cannot be brought to the test of examination; as well might you try to examine painters or sculptors in their arts, and if there is no actual standard by which to try them, neither is there any by which you could try an architectural design or pronounce its author qualified or unqualified to practise. You can examine a candidate in building construction, and if he shows ignorance you can, without fear of contradiction, pronounce him unfit to be an architect on that score; but what examiner would dare to pluck a candidate on the ground that his design was artistically bad? One may easily imagine the outcry that would be made, the prejudices that would be offended, and the battle the examiner would have to fight with men of rival schools. He would be told at once that he had exceeded his powers, and had no right to prevent a man from earning his bread in the profession because his work did not happen to suit an examiner's taste. And the objection would be a very fair one, for architecture can no more be brought to the bar and tried by a fixed code than the other arts, and no board of examiners would ever dare to attempt it.

This being so, it follows that any man who passed in building-construction and knew how to lay his drains, would, under the proposed scheme of registration, be ushered into the world as an architect; and, not only so, but he would receive, as it were, the Government stamp or hall-mark to certify to the world that he was, in every sense of the word, a genuine architect, although he might be more incapable than his own office-boy of producing an architectural design that was decently tolerable to an artist's eye. If this is what is meant by raising the status of the profession, we may, in all conscience, pray heartily to be left where we are.

It is, no doubt, the impossibility of applying the test of examination to the artistic side of our work that has driven the advocates of higher examination for architects to attach an exaggerated importance to the scientific side. After reading the astounding list of sciences that we are invited to learn, one is reminded, with Mr. Aitchison, of the knight in "Wonderland," who was equipped with a mousetrap lest he should sleep at a place overrun with mice, and a beehive lest he should meet a swarm of bees in his travels. We architects have no occasion to enter the laboratory of the chemist or the physicist; the little knowledge we might pick up there would be worse than useless, and in any real difficulty we should be forced, after all, to rely on the advice of the chemist or physicist himself. We need know no more about optics than the simple laws of perspective. In questions of heat and electricity we must be guided by the advice of specialists, and it is enough for us to know to whom to go, and such general facts about those matters as lie within the reach of every layman. Of mathematics a very little indeed will be found practically sufficient, and I fail to see in what an architect would be the better for knowing much of botany or even geology. In all these things we must, like other people, be content to accept the result of other men's studies and to believe those who have made these sciences their life's work. Life is not long enough for all this. No architect ever did or ever will make himself master of such a mass of scientific matter, and if we merely dabble in it we shall only be wasting our time, or, at the best, acquiring that little knowledge which is proverbially dangerous.

The main point which I want to make clear to-night is that the examination test to which it is proposed architects should be submitted cannot be applied to the artistic, but only to the constructional qualifications of the candidates; that is to say, not all to their skill in architecture, but only to their knowledge of building.

Consequently, as it admits men to our profession on mechanical grounds alone, it lowers architecture to the level of a mechanical art, and the change, if it ever came to pass, could not fail to be detrimental to the pursuit of architecture as a fine art. It would open still wider the breach which unfortunately divides it from the sister arts of painting and sculpture, and in so doing would condemn it to a lifeless monotony and hopeless unprogressiveness. It is, believe me, in the extending of an architect's skill into the decorative arts, in the closer union of himself with other artists, in the cultivation of the power to ornament his own handiwork, and so of introducing consistency and harmony into what otherwise is a mere jangle of jarring notes struck by unsympathetic hands, that the hope of architecture among us lies. The true brethren of the architect are the painter and the sculptor, not the surveyor and the engineer, and those are no true friends of our art who would try to persuade us otherwise.

Let it not, however, be supposed that I undervalue any plan for protecting the public against bad building. Against bad architecture nothing can protect them except their own good taste, but against bad building it is possible to erect safeguards. This, however, I repeat, has already been done by a legal machinery independent of us, which renders any safeguard of our own devising superfluous. If it be thought that the present system of supervision by local boards is inefficient, that is a matter for the public to see to; it may easily be made more stringent, and its area of jurisdiction may be widened so as to cover the country as well as the towns. So far from wishing to supersede the present system, I would see it improved; in particular I should like to see the office of local surveyor in small country towns undertaken by persons of higher qualifications, and in London and the larger towns I would have the number of District Surveyors increased till they were able to exercise such supervision over buildings in progress that bad construction could not escape detection.

Let it not be supposed either that I undervalue the importance of improvement in architectural education; only let it not consist in superficial dabbling in a host of scientific subjects, none of which we shall have time to master, and about which in the end we must take the opinion of experts, but in such matters as really belong to our craft; not in chemical analysis of our building stones, but in practical masonry; not in botanical classification of our timber, but in actual carpentry and joinery; not in the theories of optical science, but in the study of light and shade and perspective effects. A month spent on a building in progress under the eye of a friendly clerk of works will be of more use to a student than a year spent in the laboratory of the chemist or the experimental philosopher. It is a piece of training that I always recommend to my own pupils after they have seen something of office work, and I am sure there are few better.

Lastly, let me not be supposed to undervalue the constructional part of an architect's work because I say that this part is not architecture, but building. Architecture follows building, and therefore building must precede architecture and is included within it. There can be no good architecture without good building, and I firmly believe that no man ever has been or ever will be a good architect without being first a good builder. The great masters of old are at least as remarkable for

skilful construction as for beautiful design; and it will be admitted that the same is true of the most eminent architects of our own day who have certainly shown themselves as attentive to strength and convenience as to purely artistic quality in their work. Sir Charles Barry, Mr. Street, and M. Viollet-le-Duc certainly cannot be accused of want of constructive knowledege; no engineer could have more skilfully saved the great central towers of St. Alban's and St. David's from ruin and set them on new and substantial legs again than Sir Gilbert Scott; and I wonder how many of those who boast of their practical knowledge in comparison with those whom they call the "artist architects" would venture to give a lesson in building construction to Mr. Pearson, Mr. Butterfield, Mr. Waterhouse, Mr. Norman Shaw, or Mr. Bodley. There is no more fatal error than to suppose that the two sides of our profession are antagonistic, and nothing can be more injurious to architectural study than to consider the one and ignore the other, as any scheme of examination that can be devised is bound to do.

Before we set to work on any revolutionary plans and upset our present constitution let us consider how architecture in England compares with that of other countries where it enjoys State protection and control, and where something like State education is provided for its students. I quote from a paper read at the late Conference by Mr. Phené Spiers, whose knowledge of the training of architects both in England and France entitles him to speak with authority. He says,—"There is no national school of architecture here; there is no traditional teaching of 200 years as in France; so far as architectural design is concerned I am inclined to think this is a positive advantage, and that in consequence English architecture is at present in a much more healthy state than that either of France or Germany. In ecclesiastical architecture it has always been so, and of late the progress made in domestic and town architecture has been such as to outstrip entirely our foreign contemporaries."

One may without vanity accept this picture as a true one. Travel where one may on the Continent one cannot but be struck by a certain tameness and hardness, and a cast-iron monotony that characterises even the best work one sees. Perhaps our worst English work is worse than anything we see abroad, but our best is incomparably better; it bears signs of life and progress and of wholesome originality that are wanting elsewhere; and foreign architects themselves now look on English architecture and architects with a respect unknown before.

The cause of this may be found in our freedom from the shackles of State control on the one hand, and the enervating influence of State protection on the other.

Liberty and free trade are necessary to the growth of art, and any measure for controlling or regulating the pursuit of architecture stifles that element which belongs to art and brings into prominence that which is purely mechanical.

In Italy and Austria the architect is a man who has failed to qualify himself as an engineer. It is the engineer who restores ancient buildings and builds new ones, while the architect figures as little better than a clerk of works.

Can anything more expressively illustrate the tendency of legislative interference to eliminate that element which constitutes the difference between a mechanical and a fine art? Such would be inevitably our fate if architecture were made a close profession. Hitherto we have been free; in our freedom lies our hope of the future; our true wisdom lies in guarding it jealously against State interference and bureaucratic control. If engineers and surveyors choose to put the chain round their necks it is no affair of ours; but let us, at all events, beware how we sacrifice that proud independence under which we have won for our country a foremost place in the ranks of art with the promise of still greater achievement in the future.

A report of the discussion which followed will be found on pp. 894–7.

Social. — The "Mutual Cycling Club," formed by the office staff of Messrs. Colls & Sons, gave a smoking concert at the Surrey Masonic Hall on the 14th inst., presided over by Mr. W. A. Colls. Among those present were representatives of several leading firms. A long and varied programme was given.

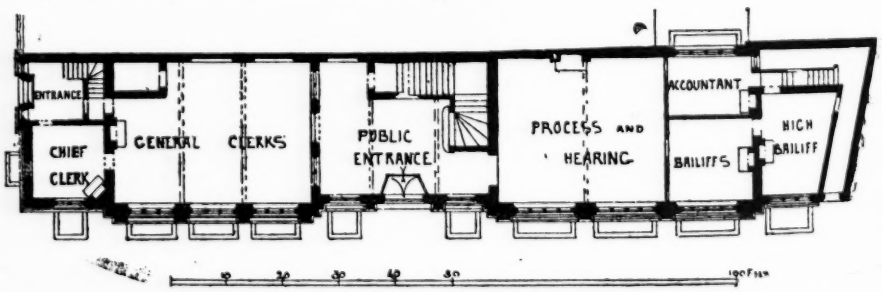
Westminster Abbey: Panel from Stalls, Henry VII.ths Chapel.

Illustrations.

NEW CITY OF LONDON COURT, GUILDHALL.

THE New Court Building occupies the sites of the Old Court, the Land Tax Offices, and the "Tap" of the Guildhall Tavern; it will ultimately, on the expiration of a short lease, be extended over the site of No. 84, Basinghall-street, and the design has been made with the view of covering the entire area.

On the ground-floor will be offices for clerks and bailiffs, on the upper floor the judge's court, 45 by 26, and the registrar's court, 36 by 26, each with a private room attached and approached by a separate stair and entrance. The general entrance will be in the centre of the façade from Guildhall Buildings, and will open into a hall and staircase giving access to the offices on the ground-floor and to the courts above. In the basement will be lavatories and stores for books, papers, &c.



City of London Court.—Plan of Ground-floor.

The style is late Gothic, harmonising with the Library and the new Council Chamber. The external moulded work will be in Portland stone, with grey Penryn granite plinths, the walling of Kentish rag; internally, the hall and staircase will be of Bath stone, the open roof of oak; the courts will have wainscot panelled ceilings.

The plan has been designed with the view of obtaining ample space and plenty of light, with good ventilation. The warming will be effected by means of hot-water coils and pipes, as well as open fireplaces.

The amount of the contract is 13,637*l.* (estimate, 14,500*l.*); the architect is Mr. Andrew Murray, A.R.I.B.A.; the builder being Mr. James Morter, of Stratford.

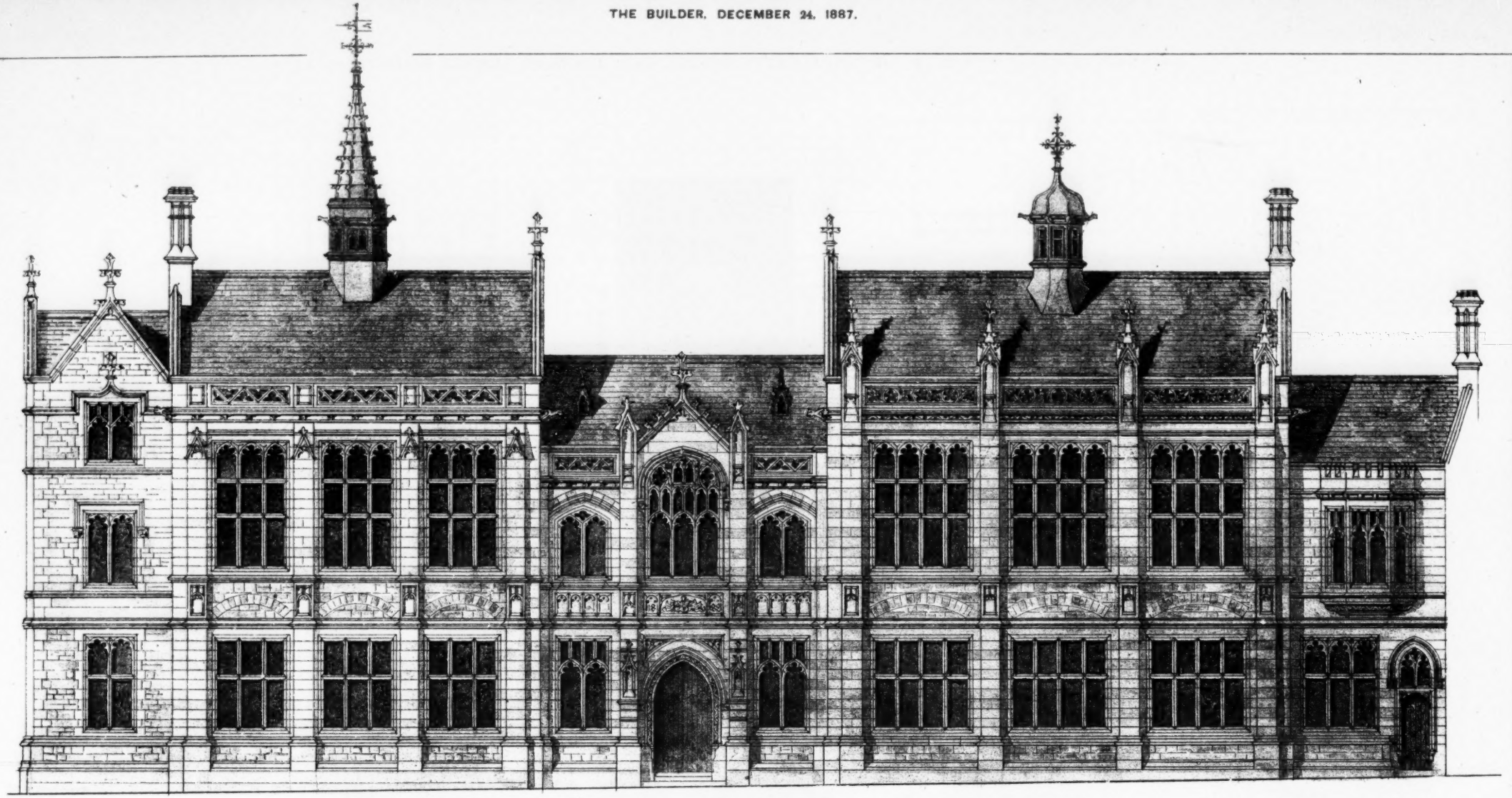
STALLS, WESTMINSTER ABBEY.

WE give a sheet of measured drawings and details of one compartment of the stalls in Henry VII.'s Chapel in Westminster Abbey, made some time since by Mr. G. G. Woodward. From the data given in Scott's "Gleanings from Westminster Abbey" it would appear that the work was probably executed somewhere between 1512 and 1516. Some further information as to the work will be found in Mr. Woodward's notes on the face of the drawing.

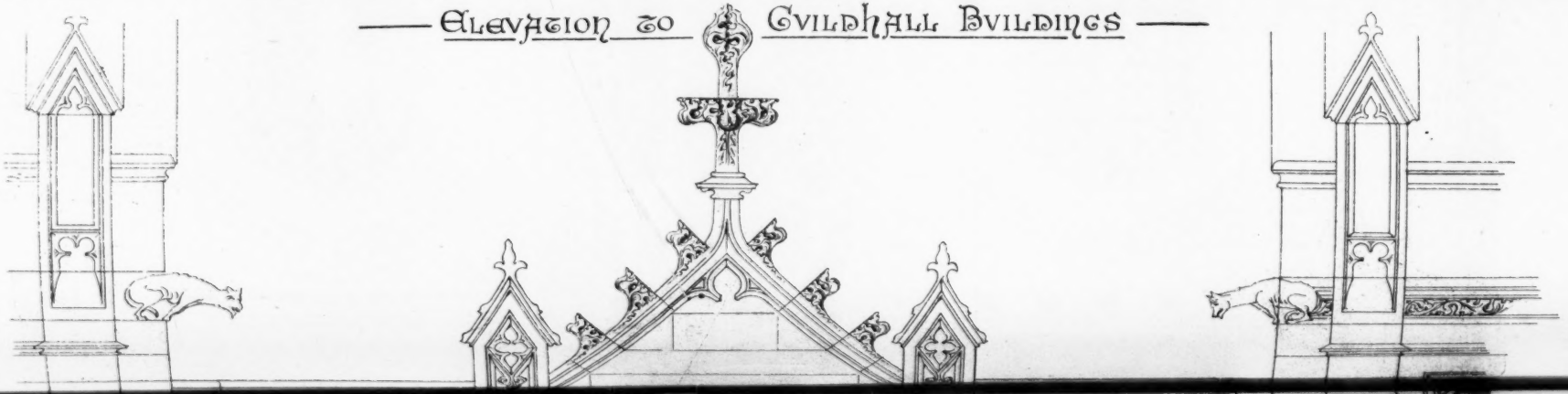
We subjoin an illustration of one of the panels from another portion of the stalls, to a larger scale, from a sketch by Mr. R. W. Paul. The work shown here is unusually fine and bold in character for the period at which it was presumably executed.

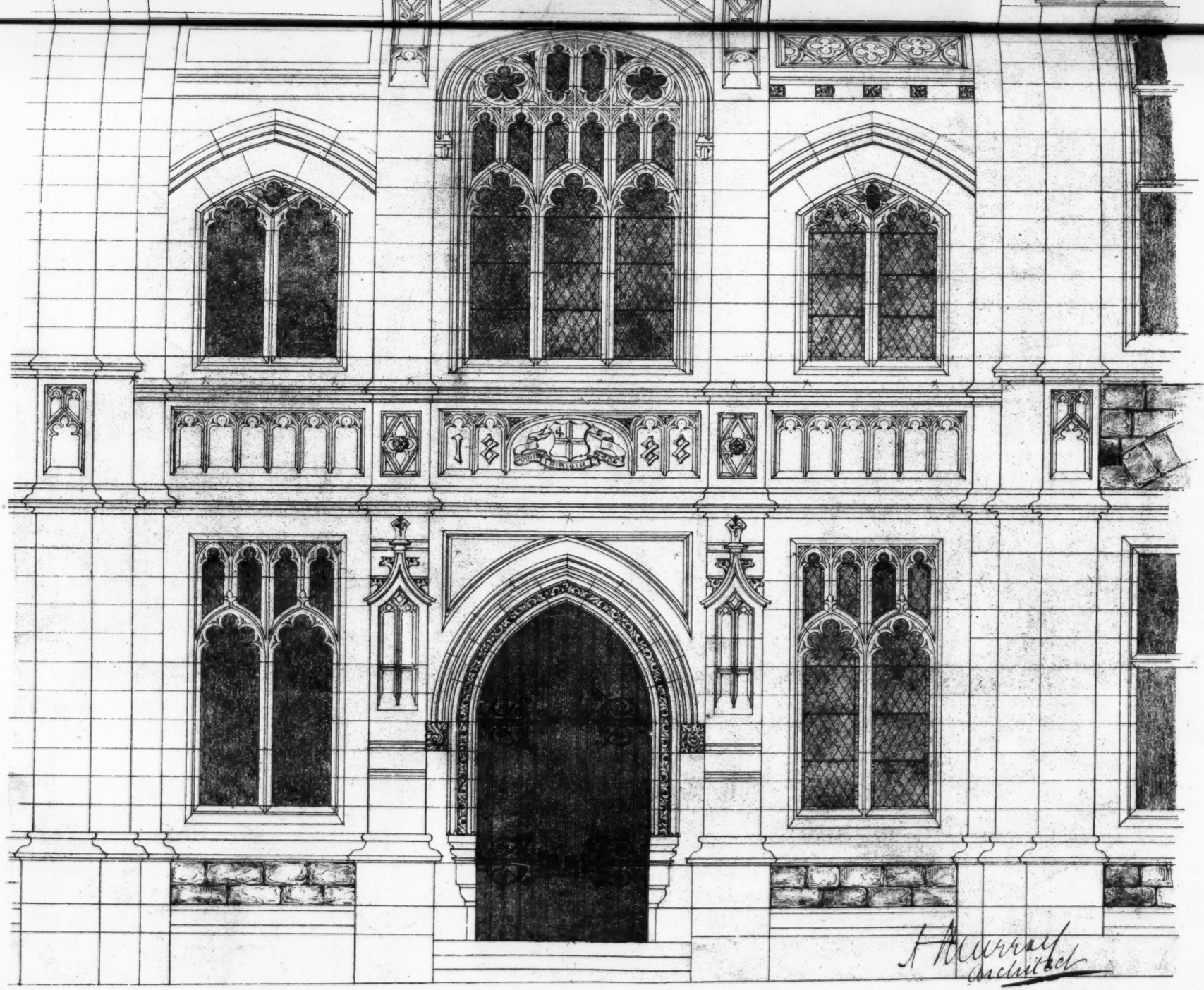
ST. ANDREW'S CHURCH, LONGTON, LANCASHIRE.

THIS church is being built alongside and to take the place of the old parish church built in 1770,—a square structure without any points of interest,—which will be pulled down when the new building is completed. The new church, which is approaching completion, is being built of brick faced externally with Yorkshire parpoint stone, with red Runcorn stone dressings externally and internally, the wall spaces between the stone internally being



ELEVATION TO GUILDHALL BUILDINGS





"INK-PHOTO," SPRAGUE & Co., 22, MARTINS LANE, CANNON ST., LONDON, E.C.

CITY OF LONDON COURT: GENERAL AND DETAIL ELEVATIONS.—Mr. A. Murray, A.R.I.B.A., Architect.

WESTMINSTER · ABBEY · HENRY·VII's · CHAPEL ·

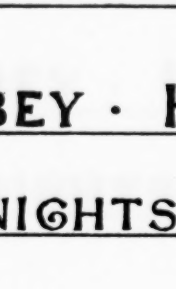
SHEET Nº 1

STALLS · OF · THE · KNIGHTS · OF · THE · BATH ·

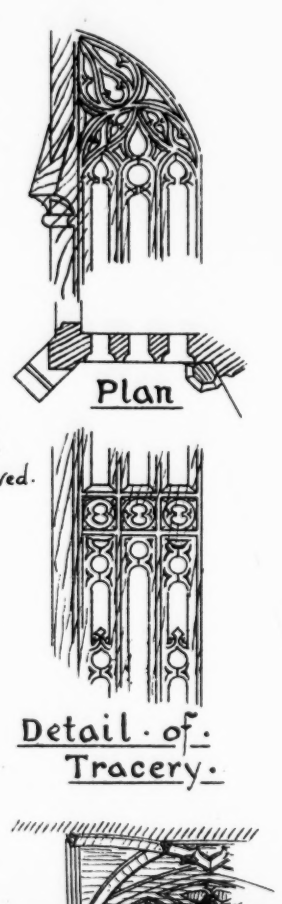
With the exception of a few, these animals have been removed.

Sketch

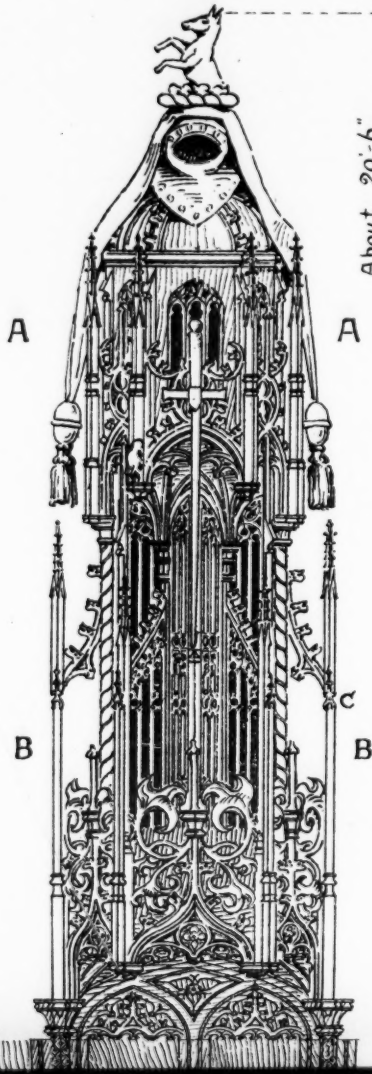
Plan



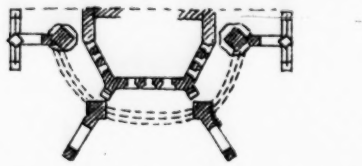
Detail · of · Tracery ·



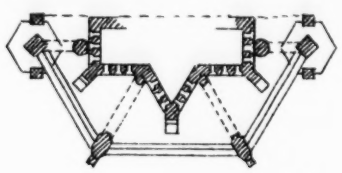
Note. The upper portion ... imately measured being ...



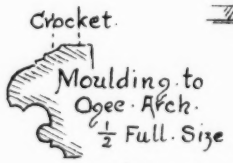
Sketch at C



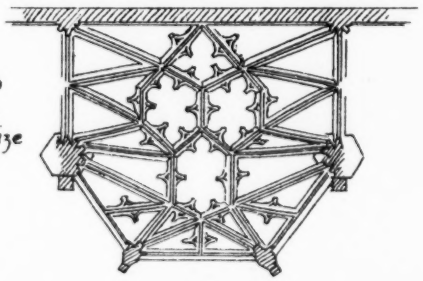
Approximate Plan at A-A



Approximate Plan at B-B

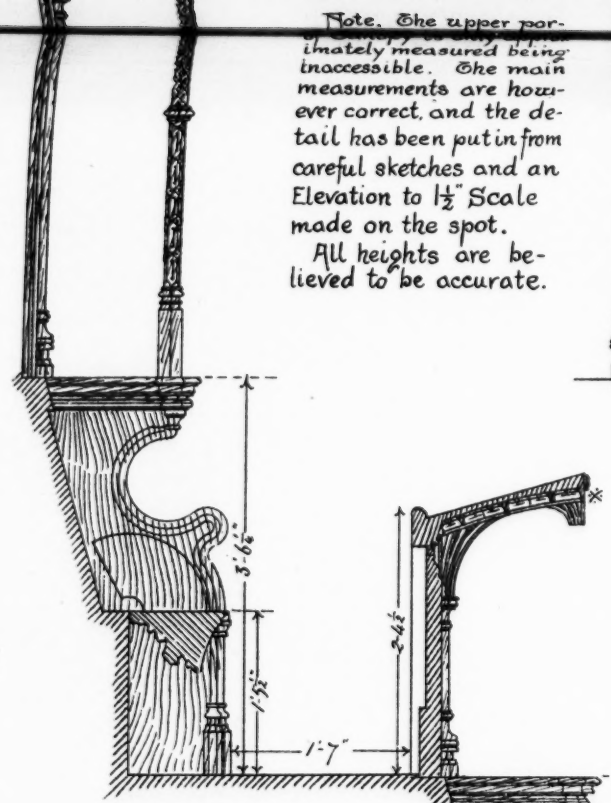


Sketch ½ Elevation of Side

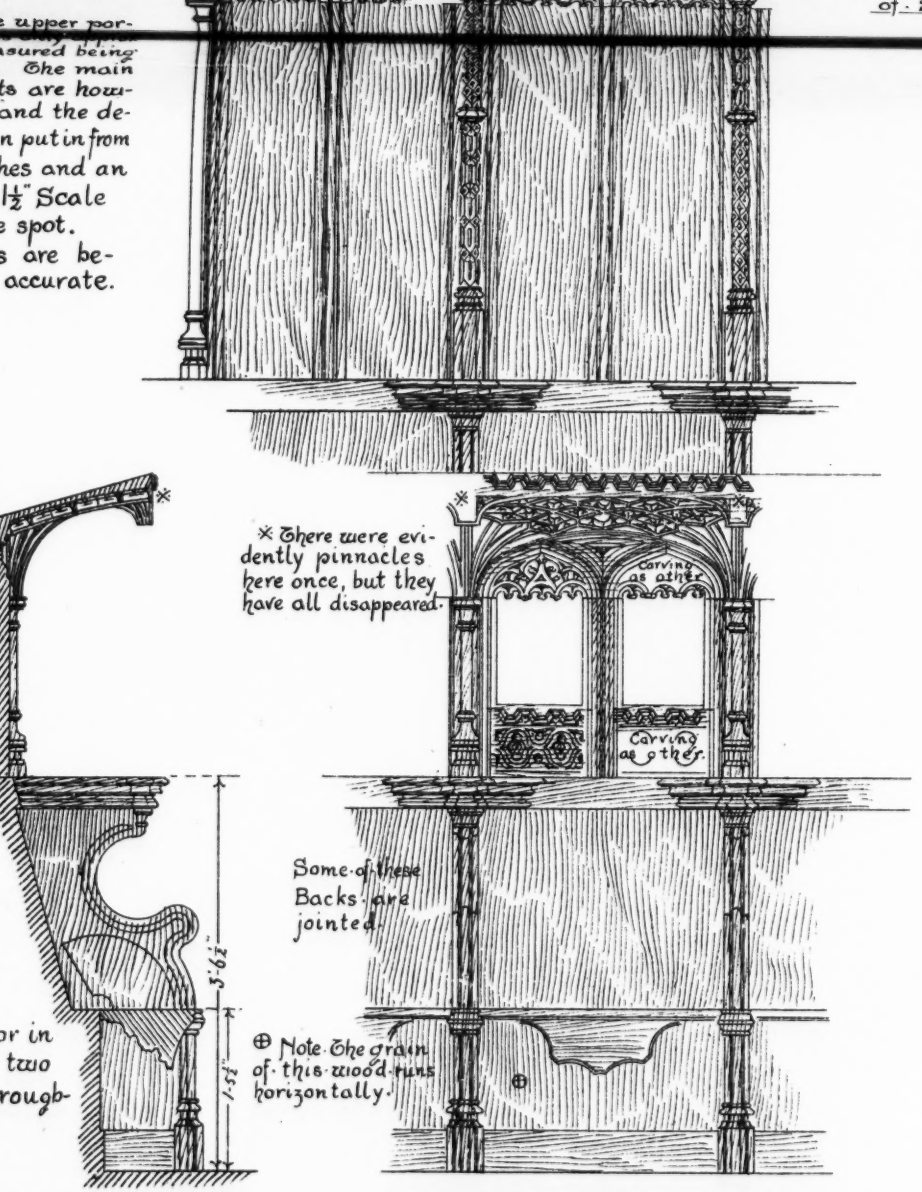


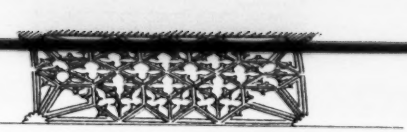
Note. The upper portion is only approximately measured being inaccessible. The main measurements are however correct, and the detail has been put in from careful sketches and an Elevation to 1½" Scale made on the spot.

All heights are believed to be accurate.

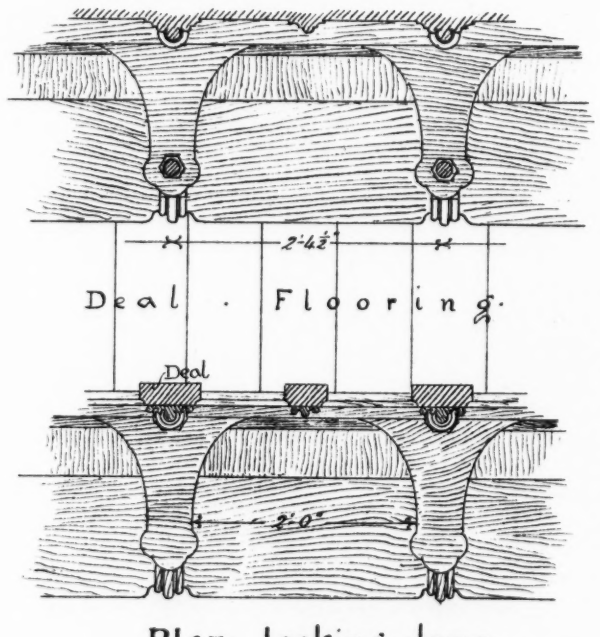


Note. These Stalls are in Oak (? Chestnut) and were probably erected soon after the building of the Chapel 1510. The six most Easterly on each side are said to have been added in the reign of George I. They are far inferior in detail to the earlier ones. No two Canopies are exactly alike throughout.

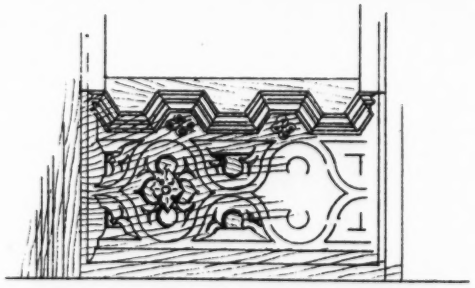

* There were evidently pinnacles here once, but they have all disappeared.
Carving as other
Carving as other
Some of these Backs are jointed
⊕ Note the grain of this wood runs horizontally.



Plan of Canopies looking up



Plan looking down



Detail of Foot-board

Section

SECTION

FRONT ELEVATION

Scale for General Drawing: Details ¼ Full Size.

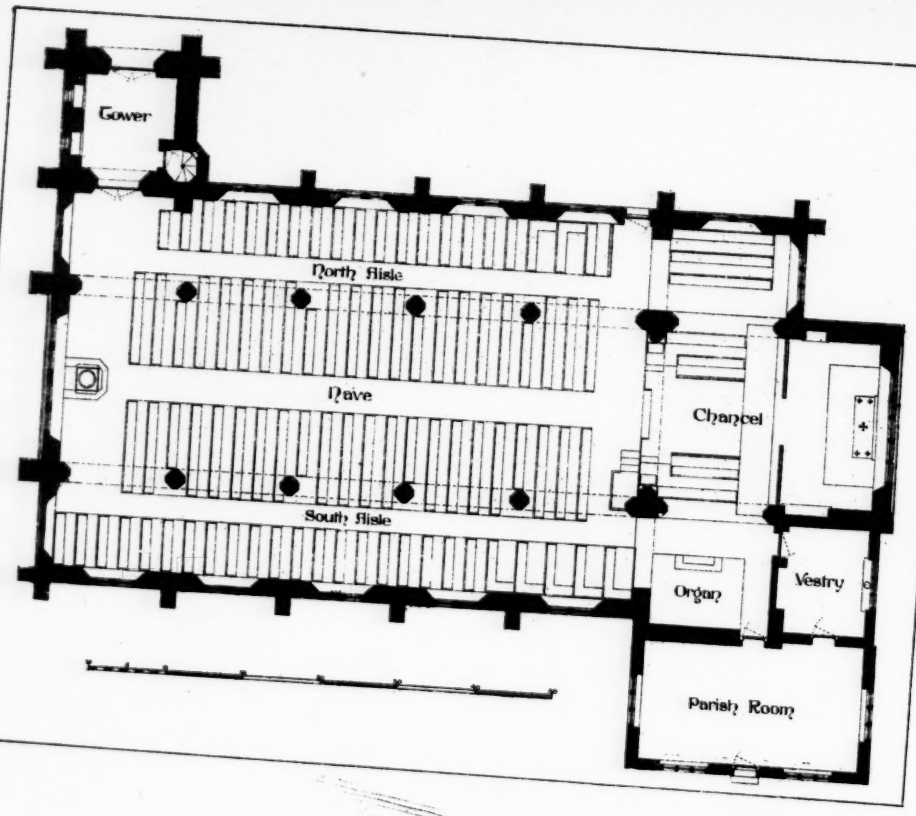
Ins 6 0 1 2 3 4 5 6 7 8 9 10 feet.

George Gilbert Woodward.

Mens. 1882-83.
Delt. April 1883.

C. F. Nell Photo-Lith & Printer.

8, Castle St Holborn, London E.C



ST. ANDREW'S PARISH CHURCH, LONGTON, LAN ASHIR

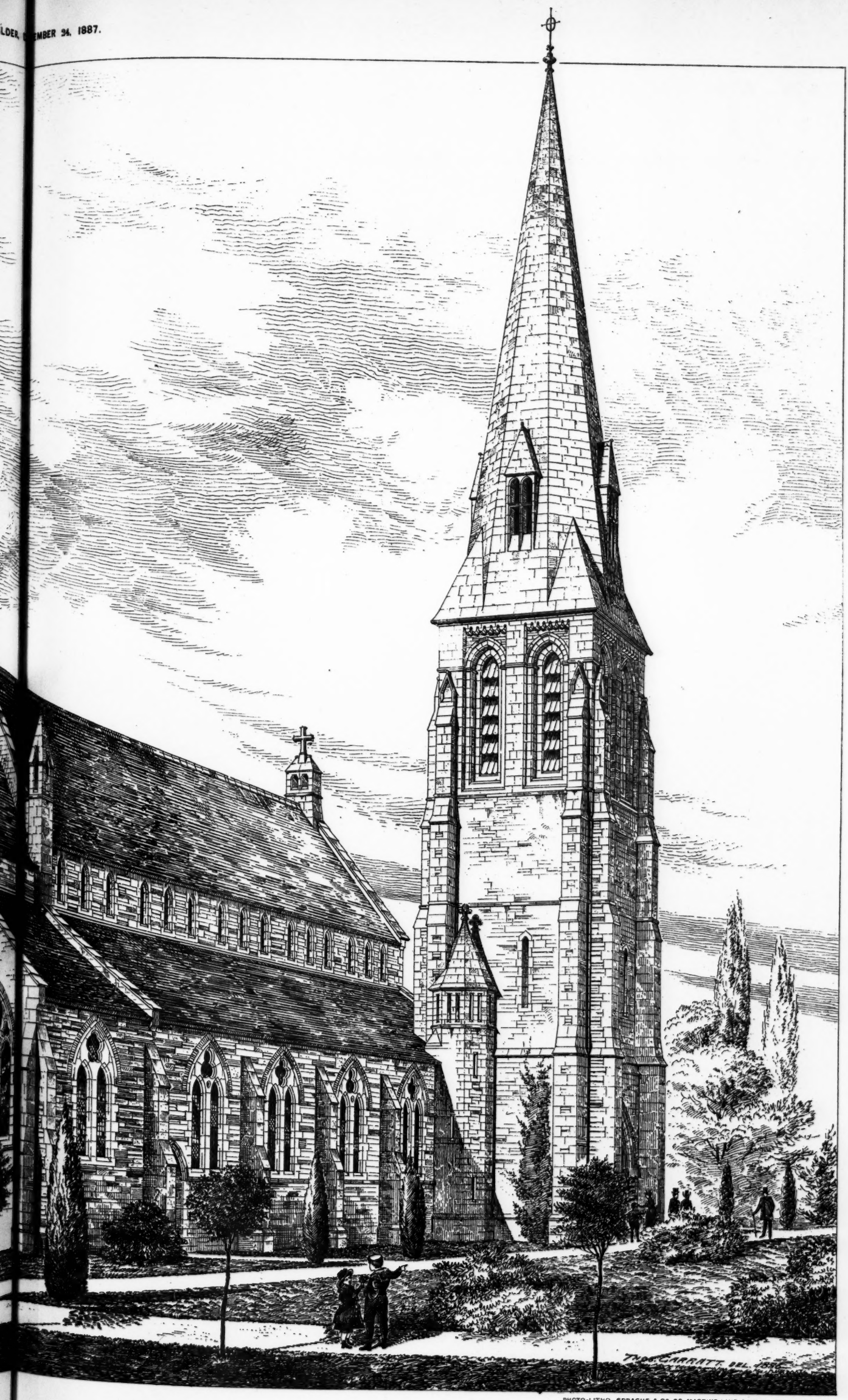
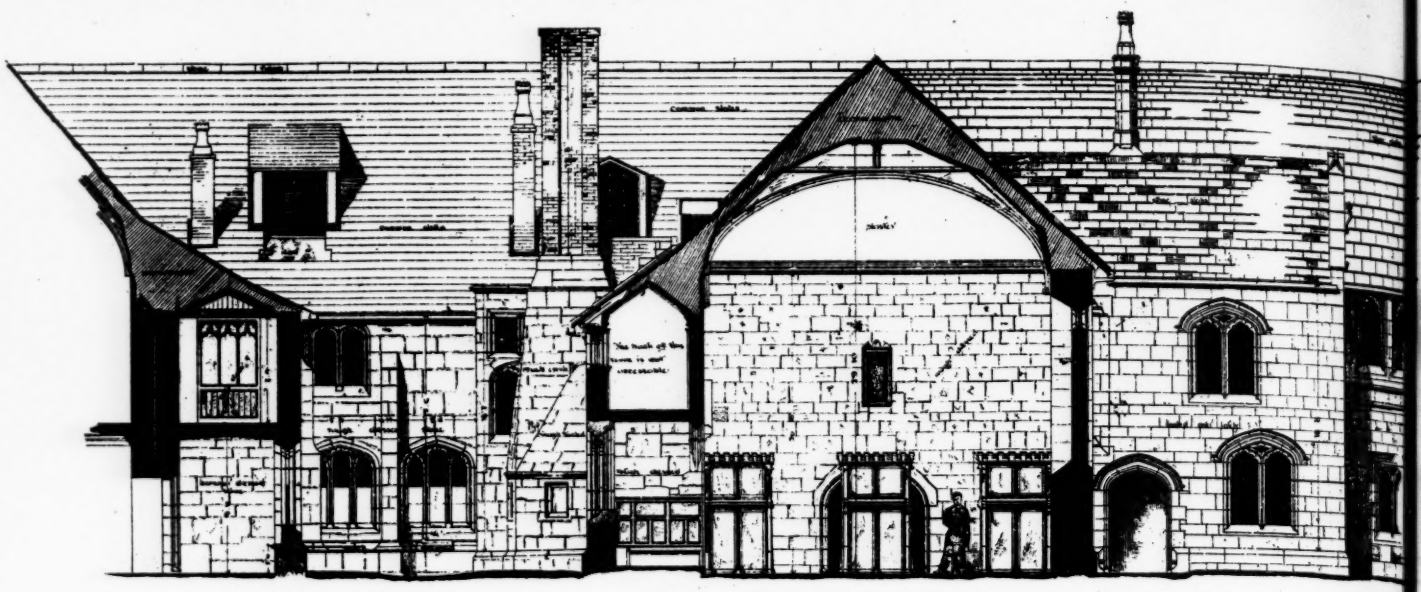


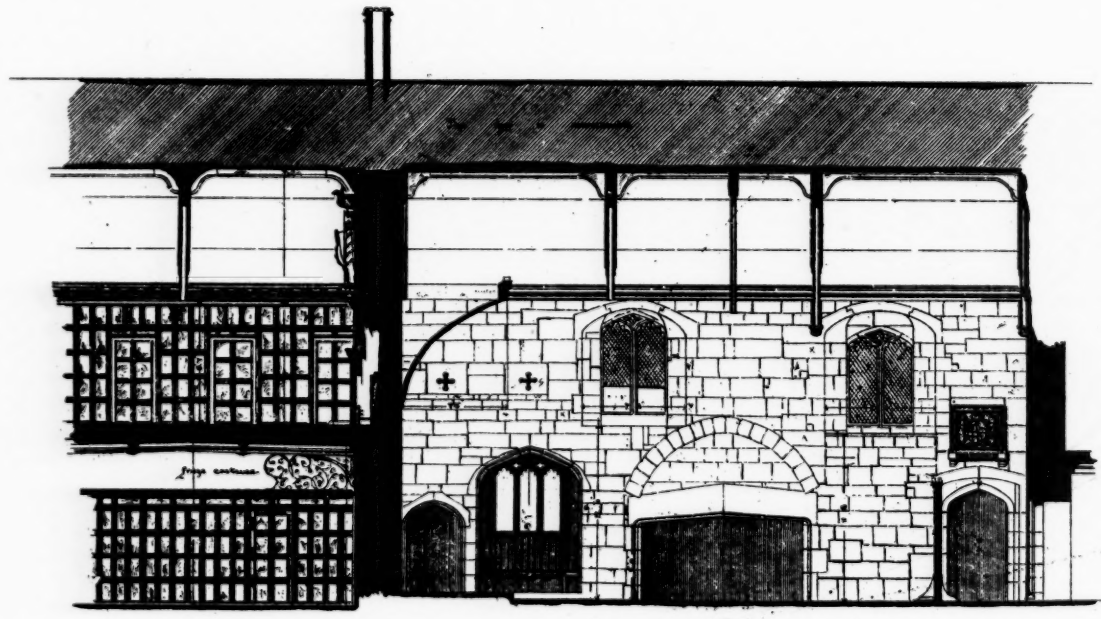
PHOTO-LITHO. SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON. E.C

ASHIRE.—Messrs. J. E. K. and J. P. Cutts, Architects.



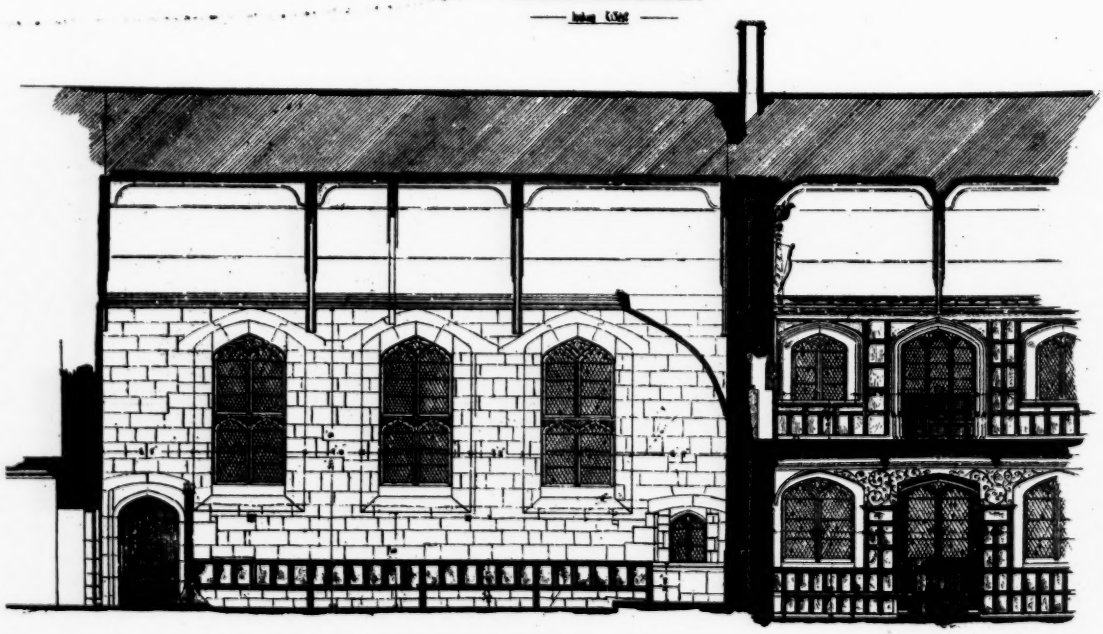
— Section on Line C — C —

looking towards Ward



— Section on Line B - B —

looking West

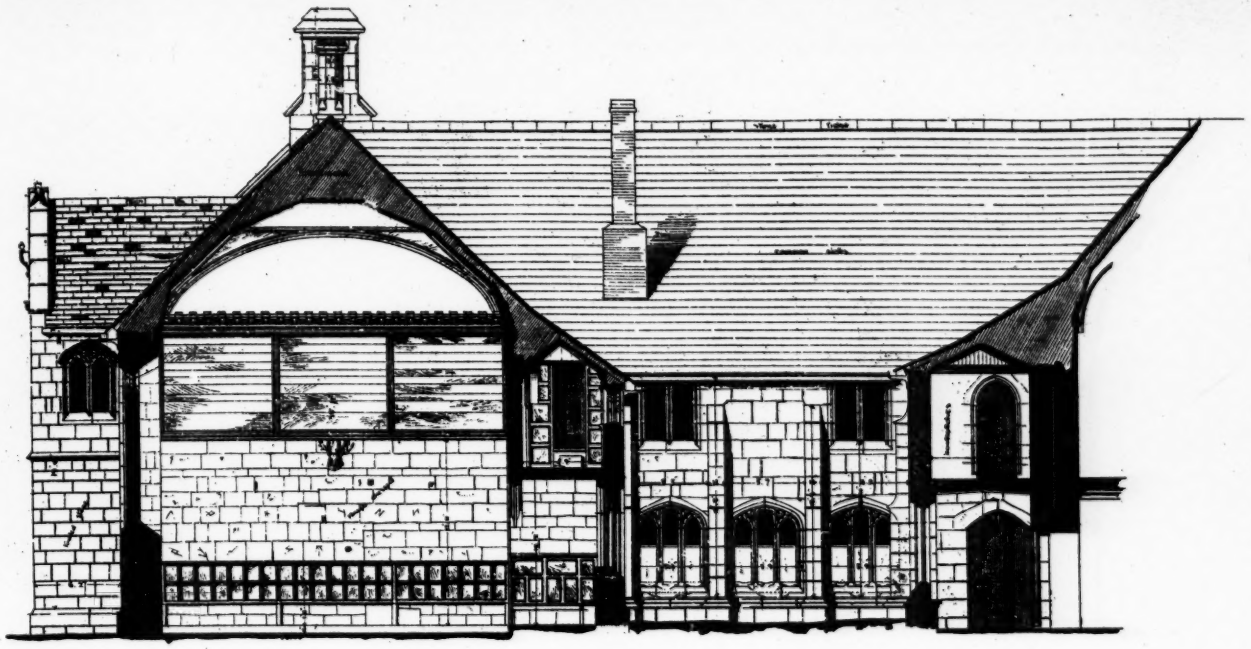


— Section on Line B - B —

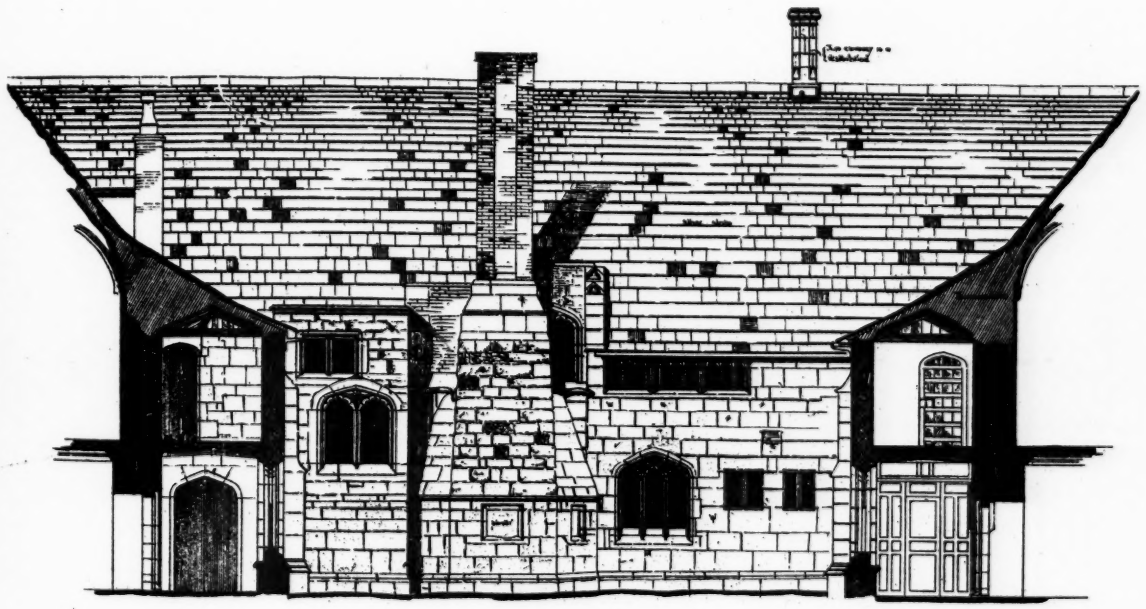
looking West

Wyman & Sons, Photo-Litho.

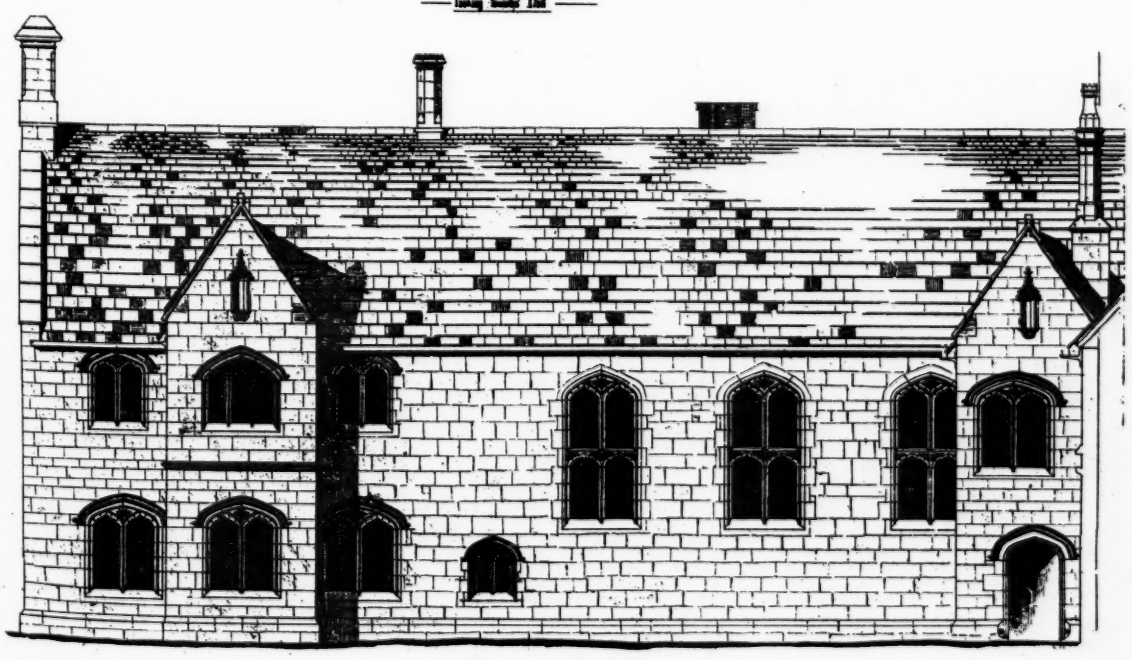
CHETHAM HOSPITAL, MANCHESTER.—MEASURE



— Section on Line a a —
looking North



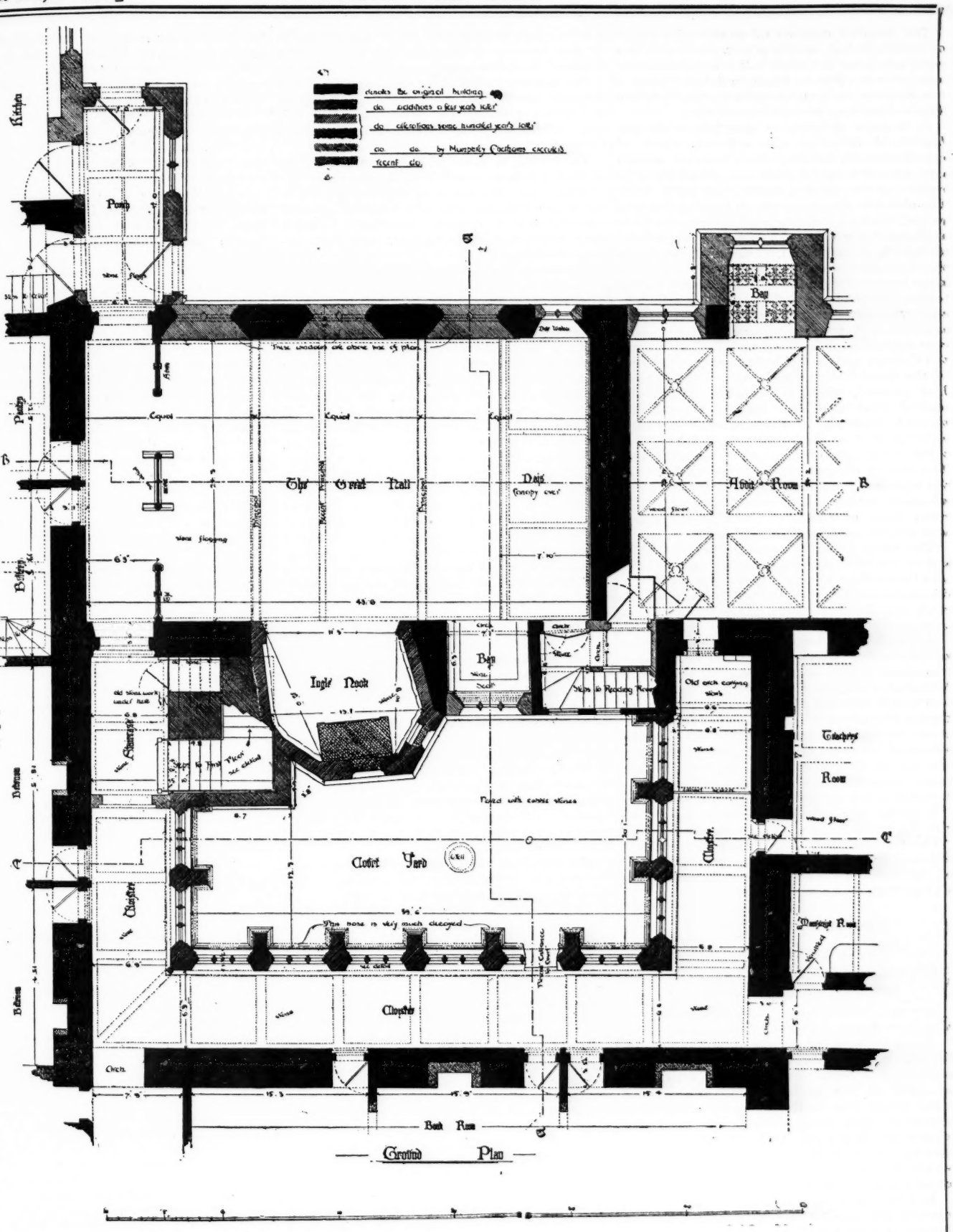
— Section on Line C C —
looking South East



— Elevation to Great Quad. —

C. Queen St. London, W.C.

MEASURED AND DRAWN BY MR. J. NEEDHAM WILSON.



Chetham Hospital, Manchester.—Plan.

plastered. The chief features inside are the lofty arcade and chancel arch with handsome clustered columns. The roofs are of pitch pine, with boarded ceilings, and covered with Westmoreland slates. The seats and fittings will also be of pitch pine. Mr. Fecitt, of Blackburn, is the builder. The contract, exclusive of the tower and parish room, is 4,231*l*. Messrs. J. E. K. & J. P. Cutts are the architects.

CHETHAM HOSPITAL, MANCHESTER.

PEOPLE who visit Manchester nowadays find very few objects of ancient architectural interest, the tide of modern improvement having swept away nearly every vestige of them; and, even to the majority of the inhabitants of the busy city, the fine old College now called Chetham's Hospital is practically unknown.

This relic of old Manchester stands on a naturally defensive site, formed by the junction of the rivers Irk and Irwell, and on a small plateau some 40 ft. above the water-level. The Hospital stands on the site of a series of ancient buildings, and is supposed to have originally been occupied by a Saxon stronghold and afterwards by the Baron's Hall of the ancient Norman line of the Gresleys and De la Warres, who were lords of the manor. Thomas de la Warre, the last Rector of Manchester, had succeeded to the manorial rights in the year 1398, and in 1425 he almost entirely rebuilt the old Baron's Hall as a College for the use of a warden, eight fellows, four clerks, and six choristers, who officiated in the neighbouring Collegiate Church till the College was dissolved in 1547.

In 1481 James Stanley, a son of the first Lord Stanley, became warden, and that was the first connexion of the Derby family with the College. In 1547 the College was dissolved and became the property of the Earls of Derby, till the confiscation of their estates under the Commonwealth.

The Civil Wars left the College in an almost ruinous state, and it was then Humphrey Chetham began the negotiations which ended after the Restoration in the feoffees acquiring the buildings, and, under the proviso of Humphrey Chetham's benevolent will, forming it into what was then termed a hospital where a certain number of poor boys selected from several neighbouring parishes were fed, clothed, and educated till of sufficient age to be apprenticed to some useful trade, and as such, with the addition of a most valuable collection of ancient books, well known as the Chetham Library, it continues to this day.

The hospital consists of an extensive range of buildings, but as the plates show only the parts adjoining the great hall it will be scarcely necessary to refer to them in detail, though a few remarks concerning more particularly the illustrations may be found interesting.

It is most difficult to ascertain with any degree of certainty the different dates of erection, as the buildings have been so altered and extended as to defy any discovery with regard to the periods when they were built. The cloisters do not seem to form an integral part of the first building, and alterations have obliterated any means of ascertaining their date, though it is assumed that the old entrance to the courtyard was done away with when the large staircase was erected. Mr. Henry Taylor thinks that the ingle nook, bay, and small staircase were added some fifty to a hundred years after De la Warre's death, and the large staircase when Humphrey Chetham's feoffees altered the College, and he thinks further that the roof of the Great Hall is the old one of the Baron's Hall re-used, which is probable. It will be noticed that the ingle nook is ingeniously twisted, evidently to make room for the then existing door to the courtyard, and has been taken advantage of in erecting the staircase. The curious old screen, the "dole window" at the high table end, and the ancient canopy are of much interest. A cleverly-planned little room exists over the bay, and quatrefoil openings are cut giving a view of the hall.

The usual butteries open off the Great Hall, and at the back exists the ancient smaller hall, now the feoffees' room, elaborately panelled and decorated, and together with the present reading-room containing some valuable ancient furniture.

Altogether, this building forms an interesting and absorbing study, and as one of the few remaining objects of archæological interest in Manchester deserves special attention. Mention should be made of the fact that the famous Doctor Dee inhabited the College when it was partly ruinous, and tradition still points out the scenes of his weird incantations, and many are the legends existing describing the fearful deeds there enacted. While he resided in the College it was shunned as an "uncanny" place.

I gladly acknowledge my indebtedness to Mr. Henry Taylor and to his valuable book on "The Old Halls of Lancashire and Cheshire" for many facts stated above, and to the Governor of the Hospital for his kindness in giving me all facilities for measuring.

J. N. W.

THE ENGINEERING AND APPLIED SCIENCE DEPARTMENT OF KING'S COLLEGE, LONDON.

We have received the following communication from King's College as to the above:—

"This Department is now entering upon the fiftieth year of its existence; a life short enough, it is true, when compared with those of some of our ancient foundations, whose chief object was to furnish a so-called liberal education, but comparatively old amid the numerous Technical Colleges which have sprung up of recent years to meet a want which King's College was one of the first to recognise and to satisfy.

In 1838, the technical 'Department of Engineering and Applied Science' became a distinct branch of King's College. From the first the Council have sought, in arranging a *curriculum*, to combine a thorough knowledge of the theoretical portions of the subjects taught with a practical acquaintance with the methods by which the theories are applied in the various experiences of engineers, whether civil or mechanical, electrical or hydraulic, military or sanitary, metallurgical or chemical. The lectures, themselves illustrated largely by diagrams, models, or experiments, have always been supplemented as far as possible by individual instruction and frequent practice in the laboratory, workshop, or drawing-office, as well as on the field; or by visits to manufactories.

The subjects recommended for study are Mathematics, Mechanics and Physics, Chemistry and Metallurgy, Mineralogy and Geology, Photography, Drawing, and Workshop practice, with Surveying and Civil Engineering, Manufacturing Art and Mechanical Engineering, and Building Construction and Architecture. An intelligent student may thus fit himself for any professional position by a sound knowledge covering a wide range of subjects. Or he may specialise in any branch of Engineering, or of 'pure science,' in which he may develope an interest.

The tendency of modern education on these subjects being increasingly practical, it may be of interest to sketch the manner in which this class of teaching is carried out at King's College.

The period of time proposed for the course of studies is three years; and during the whole of that time the student is expected to attend the drawing classes, where he receives personal instruction in the different branches of Geometrical Engineering, Mechanical, and Architectural drawing.

Workshop practice is progressive, and also extends over the entire three years of study. By making for himself various articles or models of wood, the student first learns the use of the lathe and the tools of the carpenter's, turner's, joiner's, and patternmaker's shops. Passing thence into the foundry he receives instruction in moulding and casting in iron or brass; in the fitting shop he acquires the use of metal-working tools; in the smithy he gains experience at the forge; and after some practice in metal turning, and with the machine tools in the shop, he is taught the art of working in sheet metals. Finally, under adequate supervision, he is encouraged to design and construct suitable machines or models. The workshop is placed in the charge of an experienced mechanical engineer, with trained assistants in each branch of the work. All the lathes, drilling, planing, slotting, and other heavy machinery are driven by steam power, but the lathes are convertible, so that they may also be worked with the treadle.

The Chemical Laboratories are two in number; in the Junior Laboratory the second year's students, having already in their first year attended a course of lectures on Experimental and Applied Chemistry, are trained in the use of the blowpipe and in conducting such analyses as may be ordinarily required in the practice of their profession. In the Senior Laboratory those students who wish to make a special study of Chemistry may undergo a complete course of instruction in analytical or research work; and for the encouragement of such original research a Scholarship has been founded in memory of Professor Daniell, the first holder of the Chair of Chemistry.

The Metallurgical Laboratory, together with the lectures on Metallurgy, are attended in the third year of the course; and in this year, or in his fourth if he should elect to prolong his studies, a student may gain the Siemens Gold Medal and prize, founded by the late Sir William Siemens, 'with the object of stimulating the students of King's College, London, to a higher standard of proficiency in Metallurgical Science.' This department is one of the most recent additions to the College, and is fully equipped with assay, muffle, and large brass-melting (crucible) furnaces, lathe, and testing machinery; it is intended for instruction in assaying and mineral analysis, in the treatment of ores and metallurgical products, and in the practical examination of the properties of the metals and their alloys.

The Physical Laboratory, in which Sir Charles Wheatstone conducted his historical experiments with the electric telegraph, and to which he bequeathed a large collection of apparatus, is also attended during the Course. Here the student gains experience in the use of the apparatus, in the methods of physical measurement, and in the investigation of physical and mechanical laws. An installation of dynamo-electric machinery, with the necessary instruments and apparatus for measuring and dealing with large currents, has lately been added in order to meet the increasing demand for a thorough practical knowledge of electrical science and methods.

The Photographic Laboratory is used during the last year of study. It has recently been much enlarged by the addition of a new glass-house and developing room, and now affords facilities for practice with the older wet-plates, and in the manufacture and use of the more modern dry-plates; for portraiture, copying or enlarging in the glass-houses; for architectural studies in and around the College; and for landscape work after College hours.

There is also a single-lever Testing machine of the Kirkaldy type, presented by the Cloth-workers' Company, and placed under the joint control of the Professors of Mechanical Engineering and Metallurgy. It is capable of tensile, transverse, torsion, or compression tests up to a strain of 50,000 lb., and is used to demonstrate the mechanical tests usually applied to materials, and the resistance of bodies to rupture by different strains.

Museums containing large collections of physical apparatus, chemical specimens, minerals, rocks, and the like, are available for the assistance of students to a right understanding and appreciation of the lectures.

In the Mathematical Course, the students of each year are arranged in classes according to their knowledge and capabilities, and thus receive personal assistance suited to their calibre.

In addition to these classes already described, many of the Lecturers, whose subjects do not permit of laboratory demonstration, give facilities to their pupils for acquiring an insight into practical work outside the College. Thus, the Professor of Civil Engineering supplements his lectures by a course of instruction in surveying in the field, so that the students may become proficient in the use of the instruments employed for this purpose, and the method of arranging and calculating the measurements obtained. The Professor of Mechanical Engineering is accustomed to take his classes to factories and workshops in the neighbourhood of London, where they may study the application of the principles and devices they have learned in the lecture-room; and thus, under the guidance of the Professor, they obtain a valuable working knowledge of machine construction and management. In the Geology course, also, opportunities have from time to time been afforded of accompanying one of the Professors on field expeditions.

Thus it will be seen that the student, fresh, it may be, from the school-room, is first thoroughly grounded in the theoretical portion of a subject by means of lectures, and is then encouraged to confirm, enlarge, and apply his knowledge by means of experimental work performed by his own hands. Such is the scheme recommended for students in general; but, in addition to the matriculated students who are attending the whole or a greater part of the Course, there are many 'occasional' students, who, requiring a special knowledge of one or more subjects, devote their whole time to these in the Laboratory or the Class-room for periods varying from a month to three or even four years, according to the circumstances and requirements of the student."

THE ARCHITECTURAL ASSOCIATION.

The fifth meeting of this Association for the present session was held on the 16th inst. in the meeting-room of the Royal Institute of British Architects, Mr. John Slater, B.A. (President) in the chair.

The following new members were elected, viz.:—Messrs. H. H. Dunn, G. P. D. Saul, S. A. Stanger, J. G. Henderson, D. F. Pitt, P. R. Smith, P. Hayton, Jun., J. H. Seakins, A. F. Faulkner, E. A. Masey, F. C. Eden, F. Bouch, H. W. Bannan, E. Osborn, H. J. Hicks, E. L. Lutyens, G. P. Wagstaff, and W. E. L. Wears.

The Chairman said that at the last ordinary meeting he announced that a requisition had been sent in by several of the members asking that a special business meeting should be convened to consider the construction of one of the rules. A sub-committee of the general committee had been sitting to consider the question of the affiliation of provincial societies, and had presented a report which, if carried, would involve the alteration of several rules. It, therefore, seemed needless to have two special business meetings following each other, and, as Mr. Somers Clarke, who had promised to read a paper on the 20th January next, would then be abroad it had been decided to hold the special business meeting on that date. At the next ordinary meeting, on the 6th proximo, he would be able to announce the proposed alterations in the rules relating to affiliated societies, to be discussed at the same time.

Mr. T. G. Jackson, M.A., then read a paper entitled "The Proposal to make Architecture a Close Profession by imposing the Test of Examination and Registration," which we print *in extenso* on other of our pages.

The discussion was opened by

Mr. G. A. T. Middleton, who, as a member of the committee which had drafted the Registration Bill, thanked Mr. Jackson for his criticisms, as it was only by honest criticism that the Bill

could be so altered as to make it thoroughly acceptable. Mr. Jackson seemed to think that the machinery at present existing was sufficient for the protection of the public, but that was not the case. Under the action of the Bill it would be found that all the registered architects, engineers, and surveyors would be competent men, which could not be said of all the members of those professions at the present time. It was proposed to include engineers and surveyors under the Bill, but their examinations would be distinct, and, in fact, the Bill would provide for three professions. The examinations to be fought shy of were such as those for the Civil Service, where the competitors had to work for a post, and to cram themselves with merely superficial knowledge. A real examination, like that of the Institute, did not require that kind of cramming, and those who studied to pass it were much improved by the preparation.

Mr. Bernard Dicksee drew attention to the fact that the proposed Bill would interfere with men at present in the profession, but who did not come under the qualifications mentioned in the Bill (applause). Were such men to be turned out of the profession, because the Bill would make it a *sine quâ non* that every architect must be articled, unless he had been in practice prior to 1882?

Mr. William Woodward said he presumed that the object of the promoters of the Bill was first to inquire whether the public would be better protected if such a Bill were passed. They had thought, and with some reason, that much of the discredit into which architects had recently fallen had been from a defective architectural knowledge. Many had asked whether such a Bill would convince the public that registered architects were better able to carry out works, or whether membership of the Institute was not synonymous with its recommendations. He therefore thought the discussion should turn more in the direction as to whether membership of the Institute, with its compulsory examination, would not carry more weight than registration would, if the Bill should be passed. It would have been better if an architect less distinguished than Mr. Jackson had taken up the question, as he, in consequence of his assured position, could look somewhat lightly on the endeavour of the rising generation to satisfy the public of their ability to carry out the works which might beentrusted to them.

Mr. H. R. Gough said he had come that evening expecting to hear some crushing arguments used against the Bill, but he was extremely glad to find that the arguments used had been so weak. (Cries of "Oh, oh," and laughter.) One thing that had perhaps attracted more attention than any other was the inclusion of the engineers and surveyors. But, he would ask, who was the engineer of fifty years ago? Was he not the architect? It was simply because architects had become such specialists that some of them could afford to despise construction. It would be almost impossible in a Bill of the kind to leave out the engineers; for many of them were now practising as architects, and *vice versâ*. An architect ought, to a great extent, to have the knowledge of the engineer, the same knowledge being required to put a bridge across a river as to put a girder across a big building. Many who wished to look upon architecture as an art pure and simple said that a man's qualifications could not be tested by examination; but was any one bold enough to say that the medical profession might tear up its Acts of Parliament, and the public be as well or better off? It was the quacks who called themselves architects that they desired to get rid of. Mr. Jackson had said that the Bill had been promoted by a body who would not look on the Institute as a great central body. That was not the case, because the promoters of the Bill had carefully made the Institute, so far as architects were concerned, the central body. He could not see why surveyors should not be included, as they were undoubtedly as much a branch of the profession as the engineers.

Professor Kerr.—I venture to think the time has come when the meeting ought to be called upon not to misinterpret Mr. Jackson's views (cheers). There are some to whom his phraseology may be obscure (laughter), but there are others who remember in very old times when the phraseology was in every one's mouth in this room, and was used to good purpose by many distinguished men now dead, but who, I hope, have left some behind who can speak the same language (applause). Without myself professing to be much of an artist in practice, I may say this,—that I recognise the artistic feeling, the artistic pre-eminence of those men whom Mr. Jackson represents here to-night (applause). And when he speaks of architecture being an art, and being in some way distinct from that which precedes it,—as engineering and construction,—why should he not be clearly understood, and why should it be said that he is proposing to consider construction to be the work of the builder, and the work of the architect to be the beautification of some other man's construction (applause)? Such criticisms, sir, are utterly unworthy of answer, and I hope Mr. Jackson will not take the trouble of answering them (renewed applause). Now I hope the meeting will understand Mr. Jackson's views, and see what he is contending for as regards art as a substantial, and not an unsubstantial thing. He is contending for this great proposition,—if you will allow me to put it in other language,—that England can afford, and that England ought, to maintain an architectural profession more or less suggestive of pure art. That I understand to be Mr. Jackson's proposition, and that pure art cannot be taught I understand to be his position also. I remember poor William Burges many a time, in his enthusiastic way, nailing that to the wall against all opposition. Burges was not a man,—as some few may remember,—to enter into a detailed and logical programme. He went at a conclusion and declared it in a straightforward manner, caring not who opposed him; and those views of architecture which he expressed are the views Mr. Jackson now expresses, and those which, I hope, will long be upheld in this country (applause). At the same time, I think Mr. Jackson, and those who follow him more closely than I do, will not misunderstand the views of the other side of the question as regards the movement at present on foot. It must be understood very clearly, and borne in mind by every one,—and especially by the young men whom we see here,—that the architectural profession, like all else, is undergoing a very great change at this moment in our country. The profession, as it existed when I humbly entered it, was an entirely different thing, as it seems to me, from the profession into which you are about to enter, and into which some of you have entered. It is not a change in the architectural profession alone, but a change of the whole social scheme of this country. That is a point, however, into which we cannot afford time to go; but it will be quite sufficient to lay that principle down, and I am very sure it will be understood by all thoughtful men, however young. Now, amongst the changes which are taking 'place, and which have taken place, and more particularly in connexion with our own profession, there is one great change which is taking place,—and I mention it as an illustration,—in the Royal Institute of British Architects, at this moment. Many years ago, when the members were few,—and I do not say more select than at present, because it is a mistake to suppose that they were more select than they are now,—the prominent men were, in a certain sense, more prominent before the public and the world at large, as the representatives of art and learning. The Institute was then almost exclusively a learned society. The time and the necessity for that condition of things have passed away. The existence of the Royal Institute of British Architects as a learned society, pure and simple, on anything like the lines of the other learned societies of London is no longer required by the public. The change that has taken place,—and I cannot go into the minutiæ of it,—is caused by the fact that the public and professional necessities of this country, outside and inside the Institute, do not require the Institute exclusively to confine its attention to art and learning. The consequence is that we are running the risk at present of losing touch with art and learning to a great extent. In order to prevent that, many of those who are at the head of affairs in the Institute are now adopting machinery,—which Mr. Jackson has referred to, and which other gentlemen have referred to,—which is perfectly in accord with the spirit of the age, namely, admission by examination, which constitutes an educational test so far as it can be applied and taken for what it is worth. It is not their intention,—as I understand, for I am not one of them,—to constitute an academical test as we did in the old examination, which Mr. Jackson referred to,—though I wish that examination were in existence now, for it was a great deal better than the present one (laughter). It is not their policy, as representatives of what may be called the future professional union which the Institute is to constitute, to establish an academical test of education, but it is their policy to establish an ordinary practical test, not for the sake of keeping out so much as of letting in; though, of course, they are pretty much the same thing (applause). Then come my friend Mr. Gough and his adherents with the Registration Bill. What is that? It is a perfectly honest attempt, as I read it; for I like to look at men's principles as being honest until we can prove them to be otherwise, and I see no reason for any jealousy in connexion with the movement they have entered on. Their object is this: to extend the principle of what we may call educational exclusion or inclusion,—call it what you please,—so that it shall operate all over the country. And in course of time, if any registration can be established,—and registration, remember, is simply entering one's name on the register,—if so, in course of time by this simple means you will find that those who are worthy to be architects will be, they say, recognised by the public at large, and that those who are not architects will find they are at a proper disadvantage in consequence. That is a perfectly honest object, though I myself do not believe they can accomplish it. I do not see how it is to be done, and I cannot see any chance of the Bill being read, even for the first time (laughter). At all events, let us give them a fair chance, and believe that their motives are quite as honest as the motives of those who do not think with them. Now, so much for the old Institute, and so much for the new Institute. The times move, and we move with them, and those of you who study the new philosophy will know what I mean when I say that you cannot help yourselves. Now we will turn to the Architectural Association. The Architectural Association, although not a State-recognised body, is an exceedingly useful body in its purposes, and always has been. The object of the Architectural Association is primarily education in a purely practical way, and not in an academical way, to suit the purposes of the time, day by day, whatever they may be. That is the purpose of the Architectural Association, and for want of a better means,—and I do not know that we could have a better means,—we established the means of mutual instruction. We said,—"Let us meet together, and talk, and then we shall find that we shall instruct each other." That is your position now, and I should stick to it (hear, hear). It makes one proud to belong to the architectural profession when one hears a man like Mr. Jackson read such a paper (applause), and what struck my mind in listening to him was this. You, gentlemen, here are full of enthusiasm for your art, and you have the whole world before you, and what occurs to my mind is this, we must not let the art die out; and the question is whether under the pressure of the times the art is to die out or not (cries of "No, no"). I do not wish it to do so. Mr. Jackson has quoted very distinguished names of men who have not been members of the Institute. Why they are not members of the Institute I have never been able to discover; but I know some of them, and I know they are men who never do anything without a reason. I should like to know, then, what their reason is. It may be this. Has the time come when a new body must be formed of distinguished artists, not in the Royal Academy, because it is no use for half a dozen architects to be elected by a parcel of painters (laughter),—has the time come for establishing, probably in the Royal Institute of British Architects, a nucleus of art composed of great artist-architects elected by artist-architects (cheers)?

Mr. Arthur Cates.—I have listened with great satisfaction and pleasure to the admirable paper with which Mr. Jackson has favoured us, and although he has made an onslaught on the Examination, in the success of which I take the deepest interest, I generally and cordially agree with him in his observations with regard to examinations generally. I believe with him that nothing can be more fatal to education, or to the sound acquisition of knowledge, than examinations badly conducted. The examinations of the Civil Service, which are based on cramming, are fatal, not only to knowledge, but also to the power of acquiring knowledge.

The examinations we desire are those which should teach the student what to learn. It is not so much what the student absolutely knows, but he should also have the power of acquiring knowledge, and of how, when, and where to acquire it. Unfortunately, when thirty-five years ago or more this Association proposed to the Institute to establish an obligatory examination, some men, who were very dear friends of mine, thought an obligatory examination undesirable, and fell into what I think was a great error by establishing a voluntary one. Latterly, an obligatory examination has been established for admission to the Institute, and has been in operation for some time; and, although not quite a success in the way of numbers, it has been a thorough success in the advantages offered to those who have passed it. I know I am speaking to many who have prepared for that examination, and I appeal to them whether the preparation and examination has not been to them an advantage which they would be loth indeed now to forfeit (applause). That examination was established after a considerable amount of discussion, with the view to meet the requirements of all. Since that time the views of the prominent members of the Institute have taken a considerable advance, and it was with very great satisfaction I found at the conference meeting on education that more extended views were supported. And not only by gentlemen living in London, but largely from provincial men, there was a general idea that the architectural student, thrown into the office practically without guidance, with little opportunity given him or direct object in his studies, might most likely waste his time, and find when he quitted the office that he had acquired a great deal that was useless, and very little that was useful; that, in fact, his time had been practically wasted. Now, the desire of those who are now taking a lead in the Institute, and who are pushing the matter forward, is, that from the very moment the young man enters the profession he shall have before him in each year a definite course of study which his principal shall be bound to see that he follows; that he shall, by two or more examinations, have the opportunity of testing the amount of knowledge he has acquired; and nothing is more important than an examination as a test. It has fallen to my lot, within the last few years, to come into contact with a great number of young men, many of whom have told me that they know a great deal. They have said in good faith, and with every confidence, that they were thoroughly acquainted with certain matters, but when I have asked them to give me evidence of it they have said "it had slipped their memory," or that they "did not know it as well as they thought." What we wish to do is to remedy this, to give them a certainty of knowledge, and to help them to cultivate accuracy of expression, so that from the earliest times and from their first entrance into the office the mind, the eye, and the hand shall act together, and that when they read a book they shall read it not simply with their eyes but with their minds and intellect: when they sketch it shall not be merely making a pretty picture, but they shall sketch the subject as a work of architecture, showing appreciation of its construction and the motives of its designer. It is only by a gradual course that the young man can be led up to acquire such habits. Mr. Jackson has taken up a position which he is fully entitled to take, but it is a position, remember, to which few of us can hope to attain. I think it is almost a misfortune that he should have expressed himself in the terms he did in regard to the acquisition of knowledge, because though he himself stands with many others in such a position that his own words may be very applicable to himself, it is different with the poor student,—the man of imperfect education; and there is no greater scandal in this country than the way young men are turned out from the public schools, not even taught how to acquire preliminary knowledge; and it is one step towards removing that blot that I hope the Institute will take, when it has instituted a preliminary examination throughout the country, which the young man entering the profession will pass, and for which the schoolmaster will be bound to educate his pupils. These examinations would not be held simply by the Institute, but by all the associated societies throughout the country, and the announcement you made this evening struck me as one of great interest, when you spoke of affiliated societies. One great object we have in view would be to forward in every great town, and in the provinces, the formation of societies of architectural students, with aims and objects similar to those of the Architectural Association, which would be looking to that Association, and taking from it their aspirations. This working harmoniously would bind the younger members of the profession together in one link throughout the country, and it is absolutely essential for the welfare of the profession that something of the kind should be done, and that thus the young men passing from grade to grade at last would pass the final examination, and enter the Institute. No other stamp should be wanted than membership of the Institute after a course of education such as that. There is no cramming for it. It will be a systematic and thorough education of all essential principles, which are required for the acquisition of the knowledge necessary for the architect. There will be no deviation from those glorious principles of liberty and freedom, of which Mr. Jackson spoke so warmly. There will be no closing of the profession. I cannot imagine anything worse than the idea of establishing a close profession in architecture. But I cannot help thinking that, by the agency of the Institute, with the co-operation of the societies throughout the country, and of this Association, which has already done so much, we shall raise the position of the profession, and give the young men that which they have not now, viz., an opportunity of reasonably acquiring that knowledge which is essential for the practice of architecture (cheers).

Mr. Cole A. Adams proposed a vote of thanks to Mr. Jackson and said he would have done so with even more pleasure had his paper been on some other subject. The matter was hardly a happy one, he thought, to bring before the Association, which was a body of students, to whom questions of art and practice were more useful than the politics of the profession, which were better kept out of sight there. He would not speak upon the question of registration, but hoped that Mr. Jackson would see cause, after what had fallen from Mr. Cates and other speakers, to lend his support to the Institute Examination, and not to throw cold water upon it.

Mr. Edgar Farman seconded the vote of thanks, and said, with regard to the last speaker's remark that he wished the matter had not been brought before the Architectural Association, that it seemed to him that if the proposed measure was going to affect anybody, it would be those students who were at present working for a place in the profession; therefore in his view no better subject could have been selected for debate.

The Chairman said he could not help thinking that Mr. Jackson had done a great service by calling attention to the subject (applause). The more it was discussed the better, and he entirely agreed with what had been said as to the desirability of not making an examination the be-all and end-all of the student's life and education. An examination had no force whatever unless it was purely educational in its purposes and aims. With regard to one very celebrated man, who had been mentioned (Mr. Street), he believed he was at one time strongly opposed to an obligatory examination, but changed his mind, and considered the examination established by the Institute, and the training for it, to be a good thing for students. All students, it should be remembered, had not the advantage of being under the training of a man like Mr. Jackson. As a matter of fact, a great many architectural students had no education at all, and the only way attention could be called to the necessity for education was by establishing some examination which would give them something to aim at. That, he believed, was the sole ground the Institute had taken up, in establishing the examination. He could not quite follow Mr. Jackson's analogy when he seemed to say that three voluntary students had passed per annum, and only twenty or thirty per annum the obligatory examination. When the examination had been made absolutely compulsory, and ten times as many came in, it did not seem to be such an extreme failure. No doubt the Institute would be glad to see more candidates, and certainly the provinces were sending up increased numbers. Indeed, a student educated in a provincial office had turned out to be the best man of the year, and had gained the Ashpitel prize. Mr. Jackson, again, did not seem to be quite consistent when he said that in connexion with the construction of many of their public buildings, they had the assistance of the District Surveyor, who was trained to look after those buildings. But how did they know that those District Surveyors were properly trained except by their having passed an examination? Surely, also, there were many buildings in the country with which the District Surveyors had no opportunity of interfering. He was not going now to discuss the vexed question of Registration. He entirely agreed with the opinion expressed by Professor Kerr, and he could not see how the Bill was to pass.

The vote of thanks was then put, and met with a very hearty reception.

Mr. Jackson, in reply, said:—I am extremely indebted to those gentlemen who so kindly proposed a vote of thanks, and also to the meeting for so cordially passing it. As I said when I started, registrations and architectural politics are not what I should have liked to talk about to-night. Our business, as I said, is not with ourselves, but with our art; and your society,—which is especially constituted for your mutual improvement by the discussion of our art,—is one perhaps that at first sight does not seem the right one to speak to on the subject. At the same time, consisting as you do principally of the younger members of the profession, who are to make the profession in future, I do think it is a matter you ought to make up your minds about, for it concerns you a great deal more than it does us older men, whether you are to be combined in a close profession from which the promoters of the Bill think all improper persons will be excluded, or whether you will retain that liberty which I have tried to persuade you to-night to retain, and which is essential to your success in promoting the art to which you devote yourselves. Therefore I hope I have done some good by directing your attention to this matter, and I trust that the further discussion which must follow if the Bill is brought into Parliament, will find you to a great extent well prepared to consider it from every point of view. Many criticisms have been passed on my paper, but there is one point which I think has not been touched upon, and perhaps I did not make it so clear as I intended; that is, that any scheme of registration which is to bind architects into a close profession can only have the effect,—if it succeeds at all in doing what is intended,—of preventing builders from calling themselves architects. You will not prevent their going on and building badly; you will probably prevent their ranking themselves nominally among yourselves; but they will find other names under which they will continue their evil practices, and the Registration Bill will do nothing whatever to stop bad building. It seems to me,—and I am confirmed by one of the papers contributed to the interesting collection of papers on education read at the Architectural Conference,—that the Bill would have the effect of forming, not, as the writer said, two classes, but rather, I think, three classes of people concerned in building. There would, first of all, be those who have been called "artist-architects." It is not a name I like, because I believe an architect cannot be such unless he is also an artist (applause). But we will not quarrel about names. Then there will be the "registered architects" (laughter): and there will remain the third class, the "jerry builders" (renewed laughter). The registration scheme will divide us into three classes. We shall all go on our separate ways, perfectly happy, I dare say; but I do not see that any of the three classes will be the better for the change, unless it be the third, for it is pretty certain that the effect will be to throw more work into the hands of the "jerry builder." I am quite certain the other two classes will suffer: if a certain number of men are trained to look upon the mechanical side of our art, what I call the building side, too exclusively, they will degenerate and architecture will lose a great many good men, whereas, on the other hand, if you form a class of men to look only on the artistic side, they will suffer still more. In one matter in which I have been misunderstood, Professor Kerr has been so kind as to correct a false impression. I certainly hoped in all I said to make it clear that I placed the utmost value on the constructional qualifications of the architect. I thought I stated distinctly that no man could be a good archi-

tect unless he were first of all a good builder. Good architecture implies good building, and the progress architecture has made in every age and country has come from constructional necessities and inventions, and so it will be in the future. Then, as to what I said about there already being sufficient protection against bad building, it was pointed out that in the country the surveyors are not, perhaps, always up to the mark, and one speaker suggested that the distribution of registered architects over the country might better that state of things; but I understood him also to suggest that country surveyors themselves should be required to be registered architects. I do not see why they would be in any way a different body of men from what they are now. Why do not architects seek those appointments? Because it is not worth their while (laughter); and it will be no more worth their while if the Registration Bill passes. The same class of men will present themselves, and if they are to pass the registration examination, what kind of examination will it be that will allow the local surveyors of country villages to go out to the world stamped as architects? Is that the qualification you expect the public to accept as a guarantee of competency? Another gentleman could not understand what I meant when I said that the true brothers of the architect were the painter and sculptor, and not the surveyor and engineer. He said it was only in large and important buildings that you are able to call in the painter and sculptor, and that people in ordinary practice have no opportunity of employing those persons. That is not what I meant. It is, of course, only on rare occasions that we are able to employ painting and sculpture to any great extent; but what I meant to say was, that the kind of studies to which we should devote ourselves were the studies that would be more akin to those which occupied the painter and sculptor than the mere mechanical pursuits of the surveyor and engineer,—that we should, to a certain extent, be painters and sculptors. An architect who has had no training in the allied arts can have no proper idea of decorating his buildings with painting and sculpture if he has the chance. Training of the artistic kind will, on the other hand, bring him into sympathy with the painter and sculptor, and will reflect itself on his architecture in a different way from the case of a man who is not brought up as an artist (applause). With regard to what Mr. Cates has said, we know his enthusiasm in the cause of education. Like him, I wish that the Examination, conducted by the Institute, should have that educational character and merit which he desires; but I do think that the Institute, in putting the Examination first, has "put the cart before the horse." I would be behind no one in wishing to see some general scheme of education to which all architectural students could be admitted, and I should like nothing better than that the Institute should put itself at the head of such a scheme. They may reply that they are not an educational society, but for my own part I wish they were. I should like to see a regular scheme of education, to which all architectural students could have access; where they will be sure of hearing lectures, and having instruction given in constructional and artistic matters, in the literature of the past, and in the antiquarian study of our art, which they should all know, although it is not architecture. If some general scheme could be arranged, which would put the means of education of that kind within the reach of every student, in a way that no one now is able to find, I think it would be an extremely good thing for architecture, and also the individual. In what I said about examinations, I was careful to distinguish that there are several kinds. There is only one kind necessary, that in which the teachers examine their students for the purpose of seeing if they have understood what they have learned. What I object to is a qualifying examination. In the latter case you simply teach the man to work for the examination; in the former case, you teach him to acquire knowledge, and the examination forms a mode of testing whether he has acquired it or not (applause).

The meeting then terminated.

"Architecture in the Past" is the title of a paper by Mr. William Simpson in the last number of the R.I.B.A. *Journal*.

ARCHITECTURAL SOCIETIES.

Royal Institute of the Architects of Ireland.—On Saturday last the annual meeting of the Royal Institute of the Architects of Ireland was held in their rooms, 37, Dawson-street. Mr. Thos. Drew presided. Amongst those present were, Messrs. S. Symes, J. L. Robinson, J. R. Carroll, J. J. O'Callaghan, G. C. Ashlin, W. Byrne, — Cochrane, Belfast; J. H. Fullerton, Armagh; C. M'Carthy, W. M. Mitchell, R. Miller, W. Stirling, F. Butler, Albert E. Murray, hon. sec. and treasurer, &c. The Hon. Secretary (Mr. Albert E. Murray) read the annual report, which reviewed the work of the Institute during the year. Thirteen meetings of the Council were held, a fact which showed that that body had not been unmindful of the duty entrusted to them. They had to record with regret the death of two of their life members,—Mr. W. H. Thompson, of Belfast, and Mr. Henry Hill, Cork. They hoped to have many new members added to the Institute. The Council had acted very successfully as a Board of Arbitration, and if its services in that capacity were more frequently availed of as between architects and clients, much costly litigation might be prevented. The question of architectural federation was making steady progress, and last year a Bill was printed and circulated, called "The Architects' and Engineers' Registration Bill," the object of the measure being that after its passing, architects should be obliged to undergo an examination before entering the profession. —Mr. Robinson, in moving the adoption of the report, said that no doubt there were a great many people who were not properly qualified at present practising as architects, which was a great grievance to the regular members of the profession. He criticised the action of the Board of Works in furnishing plans for nothing in the case of many buildings to the detriment of the profession.—The Chairman remarked that these plans were frequently totally unsuited to the sites and requirements.—Mr. Robinson said that that was invariably the case. He thought that patronage ought to be more equally divided. The architects as a body were very much dissatisfied with the arrangements which existed at present.—Mr. Carroll seconded the motion, and the report was adopted.—A communication was received from the Committee of the Technical Schools, and it was resolved that a donation of three guineas should be made to them on behalf of the institution. A like sum was also voted to the Architects' Benevolent Society. —The Chairman read a statement with regard to the position of architects in connexion with the Building Acts and the power of the municipal authorities to interfere in the case of new buildings. He advocated that some step should be taken to ascertain the statutory powers of the Corporation in this matter.—The following gentlemen were elected on the Council for 1888: Messrs. Albert E. Murray, Sandham Symes, J. J. O'Callaghan, J. R. Carroll, George C. Ashlin, Thomas Drew, Charles Geoghegan, James H. Owen, William Mitchell, Thomas Deane, and J. L. Robinson.—Messrs. J. H. Fullerton, Armagh, and R. Langishee, Athlone, were elected Fellows. Messrs. J. H. Pentland and T. M. Deane were reappointed auditors.—Mr. S. Symes was presented with an illuminated address on the part of the Institute in recognition of his services as hon. treasurer. The annual dinner was afterwards held at the Grosvenor Hotel.

The Sheffield Society of Architects and Surveyors.—The second meeting of this Society for the present session was held at the School of Art on the 13th inst., to hear an address Mr. J. W. Connon, F.R.I.B.A., of Leeds, on "The Legal Registration of Architects." Amongst those present were Messrs. T. J. Flockton (President, in the chair), J. B. Mitchell Withers, C. J. Innocent, C. Hadfield, E. Holmes, W. F. Hemsoll, E. M. Gibbs, J. Fawcett, W. F. Ragg, R. Davidson (Borough Surveyor), A. F. Watson, T. Winder, J. M'Inery, E. M'Dougall, A. J. Greenwood, J. W. Wardle, C. Gibson, H. Webster, H. W. Lockwood, W. Potts, S. Kedward, J. Norton, W. J. Taylor J. E. Benton, J. R. Wigfull, C. M. Hadfield, C. B. Flockton, T. W. Moore, W. T. Campsall, W. Watkin, Banks, J. H. Thomas, and W. C. Fenton (hon. sec.). In the course of an able and interesting address Mr. Connon advocated the legal registration of architects on the basis of the existing registration of the legal and medical professions. He showed its advantage (1) to the student, (2) to the architect in practice, and (3) to the public. He urged the desirability of union amongst architects in pressing this question forward for the consideration of Parliament. A discussion ensued, in which Messrs. Hadfield, Innocent, Holmes, Fenton, Gibbs, and Hemsoll took part. Eventually, on the motion of Mr. C. J. Innocent, seconded by Mr. C. Hadfield, a hearty vote of thanks was unanimously accorded to Mr. Connon for his address.

COMPETITIONS.

Gloucester New Public Baths.—The Corporation called in Mr. T. Roger Smith, F.R.I.BA., to advise upon the sixty plans received in the above competition, and under his advice have awarded the first premium of 50*l.* to Mr. J. Fletcher Trew, architect, of Gloucester, for the set of plans under motto "5,680*l.*," and the second premium of 25*l.* to Mr. J. Cook, architect, of Manchester, for the set of plans nnder motto "6,000*l.*" It is proposed to publicly exhibit all the plans in the Corn Exchange, Gloucester, on Tuesday and Wednesday, the 3rd and 4th of next month.

New Barnet Public Building Competition.—We are informed that the New Barnet Public Building Committee met on the 13th inst. to inspect the eighteen sets of designs sent in by architects. Nine were selected for further consideration at a meeting to be held the first week in January, 1888. From eight to ten o'clock the same evening the public were admitted to view them. Eight of those selected for further consideration bear the following mottoes:—"Æquo Animo," "Enterprise," "Justice," "Pro Bono Publico," "Spes" A (there were two designs under motto "Spes" and the Committee marked them "A" and "B" respectively; "B" was rejected), "Well-considered," "1887," "5,000," and the ninth bears a device of a star in a circle. The nine rejected designs were not considered by the Committee suitable for the district.

Sheffield Board Schools.—At the meeting of the Sheffield School Board on the 15th inst., Mr. Leader, on the minutes of the Buildings Committee, called attention to the competitions that had recently taken place amongst architects for the best plans for new departments. It seemed to him (according to the report in the *Sheffield Daily Telegraph*) that the competitions were conclusively in favour of the capacity of Mr. Innocent (the Board's architect) to produce the required plans, and he therefore suggested that the Board might very reasonably discontinue these competitions, which took up a good deal of time, and also involved some expense. Mr. Fletcher (chairman of the Committee) said he believed the views of Mr. Leader were shared to a considerable extent by the Com mittee.

Working Lads' Institute, Greenwich. On the 8th instant the West Greenwich Ragged School and Working Lads' Institute, Bridge-street, Greenwich, was opened by Mr. F. A. Bevan. The building consists of a reading and refreshment room, entered from the front vestibule; a kitchen, a gymnasium, and an infants' room (with gallery), all on the ground-floor. A wide staircase leads up from the hall to a teachers' room on the Mezzanine floor, and to the first floor, which contains a large school-room with a platform at one end and an open-timbered boarded ceiling; class-rooms and other accommodation. The second-floor consists of two large rooms, which may be used as dormitories for boys, and the caretaker's apartments. Good cellars are provided, and the school is heated by low-pressure hot-water pipes. The total cost, inclusive of lighting, heating, &c., is about 2,000*l.* The architect is Mr. George Baines, of London, the contractor being Mr. H. L. Holloway, of Deptford.

Telephones.—The Equitable Telephone Association has just completed an installation of their "Swinton" telephones at 27, London-wall, whereby all the different floors of the warehouse are put in direct communication with one another and with the general and private offices. The same company has at present in hand a similar installation, with twenty-seven telephones, in the new warehouse and offices of the Co-operative Wholesale Society, Limited, Leman-street, Whitechapel, and has also received an order to fit up telephonic communication between all the different wards of the Hospital for Consumptives, Ventnor, Isle of Wight.

LINE OF FRONTAGE UNDER THE PUBLIC HEALTH ACT.

NANKIVELL *v.* THE BOURNEMOUTH COMMISSIONERS.

In this case, heard in the Queen's Bench Division of the High Court of Justice (before Mr. Baron Pollock and Mr. Justice Hawkins), an important decision was given as to sending back to magistrates cases stated by them, to be restated on any point on which, though they have taken evidence, they have not given a finding or a distinct statement of fact, and the Court consider it material and therefore necessary that they should do so. The case had arisen in this way. There had been a complaint against Mr. Nankivell for making an addition to his house, by erecting a stable in his front garden beyond the line of houses in the "street." The houses, as usual in such places as Bournemouth, are detached, standing in gardens, and the stable was not united to the house. The complaint was under Section 156 of the Public Health Act, which provides that it shall not be lawful in any urban district, without the written consent of the urban authority, to bring forward any house or building forming part of any street beyond the front wall of the house or building on either side thereof, nor to build any addition thereto beyond the front of the house or building on either side. The defendant, before the magistrates, contended that the place was not a "street," and that the house was not part of a street within the meaning of the statutes, and that the stable was not an "addition to the house" within the Act. The magistrates, in stating a case for the opinion of this Court, stated that the stable was structurally separate from the house, and stated the question as to whether the place was a street, but not whether the stable, apart from its being structurally separate, was an addition to the house, and whether the house was part of a "street," within the statutes. The case had been opened and partly heard, and the Court were of opinion that they could not decide the case without distinct findings or statements of fact upon these points.

Mr. Foote, on the part of the defendant, submitted that the case should be sent back to the magistrates to be restated on that point. The cases, he said, established that, though the Justices could not alter their judgment, a case could be sent back to them to be restated on any point. [To this the Court assented, though the Master of the Crown Office added "provided they have taken evidence on the point."] No doubt, but here the evidence was taken, so that the magistrates have all the materials before them. And it is submitted that the case should be sent back to them, to be stated (1) by their finding and stating whether the new building was in fact "an addition to the house," if its being structurally separate did not prevent its being such addition; and (2) whether the house was part of a "street" within the 156th Section of the Statute. This latter point, he said, had been distinctly raised before the magistrates, but they had not given a sufficient finding or statement of fact to raise it.

Mr. Bosanquet, Q.C., on the other side, did not object to the case being restated on the first point, as to whether the stable was "an addition to the house," but as to the other point, he insisted that the case could not be restated so as to raise a new question, and the question now raised in the case was "whether the place was a street."

Mr. Foote urged, in reply, that this would not raise the question which he desired to raise and had raised before the magistrates,—viz., whether the house was "part of a street" within the Act. It was undoubted and laid down in the Act itself that any road, lane, &c., would be a "street." The real question was whether this house was part of the street.

The Court were clearly of opinion that this was so, and that the magistrates ought to let them know what they had found to be the fact, as to whether this was a new building and an addition to the house, and whether the house was part of the street.

Case sent back accordingly.—*Times.*

CASE UNDER THE METROPOLITAN BUILDING ACT.

A somewhat important point was raised last week by Mr. Knightley, District Surveyor of Hammersmith, before Mr. Paget.

A builder, named Heath, removed some 15 ft. of earth from beneath a bay window of two stories, and underpinned it with concrete. He gave no notice, and on being requested to do so, wrote, refusing, saying he preferred to be summoned.

His contention was that as he had not removed any of the walling, it was only a necessary repair. Mr. Knightley contended that as no brickwork was removed it could not be a repair, but that it was work affecting the construction of an external wall; that the bay window formed part of the enclosing walls of the structure, and that what had been done came within the meaning of the phrase "other work." Section 9 he quoted, also 1st Rule of 1st Schedule, and By-law 3, which directs the use of concrete for foundations.

Mr. Paget said the question was difficult, and that he was willing to grant a case, but as both plaintiff and defendant asked him to decide, he said, addressing defendant, "Why did you not give notice? If you were sitting in a chair and someone came and cut off the legs, your position would resemble the bay widow after the removal of the supporting earth, and your seat would be found to be very uncomfortable. I shall fine you 10s., 2s. costs, and allow the District Surveyor one guinea for his attendance."

THE THEATRE MANAGERS AND THE OFFICERS OF THE METROPOLITAN BOARD OF WORKS.

Sir,—In your last issue reference was made to the case, which has since been very widely noticed in the daily press, of the Assistant Architect to the Metropolitan Board. There is little to be said in palliation of the unfortunate error of judgment to which he has owned; but perhaps you will permit me to point out that the conduct of the theatrical managers is an indirect testimony to the steadiness (not unknown to many London architects) with which this official must have insisted on the observance of the orders of the Board. What the managers complain of is not that Mr. Hebb got orders for the play, but that they got nothing in return. R.

[We may here mention that the case referred to was discussed at the Board meeting held last week, and its further consideration was adjourned until the second meeting after the Christmas vacation.]

"ST. AUGUSTINE AT ST. ALBAN'S ABBEY."

Sir,—My attention has been called to a letter in your issue of the 10th inst. [p. 824], written by Mr. H. Littlehales, and I dare say you will allow me to correct an error into which he has fallen in his comments on a letter of mine to Mr. Hems, of Exeter. I have not that letter before me, but I am quite sure that I did not, as Mr. Littlehales supposes, allege that the mention of Archbishop Augustine by his name alone without the prefix of Saint, was in any way "an argument in favour of his subsequent canonisation." My point was that my critic was mistaken in arguing that his being so mentioned was a proof that he was *not* canonised afterwards, and was, in fact, not canonised at all.

I do not think we can recognise Henry or any modern historian as an authority on the subject. They must, of necessity, be only compilers from ancient historians.

To some of those ancient historians Mr. Littlehales rightly appeals, but I do not know on what grounds he considers those particular ones worthy to be ranked among "the best writers of English History." Ordericus Vitalis does, as he says, at least in one passage, call the Archbishop "Augustine," while he calls the Pope who sent him "Saint Gregory." So also does Roger de Wendover, writing at about the same time; but while Roger usually calls him "Vir Domini" and often "Beatus Augustinus," he calls him also "Sanctus Augustinus." I apprehend that one such affirmative instance must outweigh a shoal of such negative instances as those quoted from translations of Ordericus and Jeffery of Monmouth.

Gocelin, a historiographer of St. Augustine (A.D. 1080 or 1090) (see the Acta Sanctorum), calls the Archbishop (as he does also the Pope) sometimes by his name alone, sometimes "Beatus," when writing of his acts in this life, but he calls him also and not seldom "Sanctus Augustinus," and he expressly says that by a decree of the Council of Clovestroo, A.D. 747, his name was inserted in the Litany.

Neither Henry nor Hume asserts that Augustine was not canonised; but even if they had done so I should prefer the authority of Roger de Wendover and Gocelin to theirs; and I should be satisfied that Pope Innocent knew what he was talking about when, in 1356, he ordered the Feast of St. Augustine of Canterbury to be kept as a "double."

The negative argument which Mr. Littlehales adduced from the reformed English Calendar would decanonise forty-three out of the fifty-four "black letter" Saints, Popes' councils and formal canonisations to the contrary notwithstanding.

As to the statues in the high altar screen at St. Alban's, St. Augustine's canonisation was not a necessary condition of his admission into that company, for I have admitted among the saints some few others, who, for their connexion with St. Alban's, were worthy of such commemoration.

Henry Hucks Gibbs.

December 20, 1887.

*** We cannot find space for any further correspondence on this subject.

WALTON-LE-DALE SEWERAGE SCHEME.

Sir,—I read with some surprise in the issue of your journal for the 10th inst. [p. 803] that "some little time back" the above Authority advertised for competitive schemes, and that Mr. Thomas Fenwick, C.E., of Leeds, has awarded the premiums.

The words "some little time back," and the name of the adjudicator in this matter, prompt me to write to you to say that "some little time back" means two years within six weeks since the schemes were deposited with the Board. This long delay has, no doubt, been a disappointment to others along with myself; but this is augmented by the news that the adjudicator, to the best of my knowledge, has not carried out a sewerage scheme under the modern requirements of the past twenty years of the Local Government Board.

Therefore, if experts are invited to compete, as I have no doubt some have done, it is most unfair to my mind that a non-expert should be the judge in such matters.

I have refrained from expressing an opinion as to the time the Board have taken, but this case suggests the question whether or not the Local Government Board should not exercise some restrictive power to limit local authorities and prevent trifling with the time of an industrious class of professional men, to say nothing of the large amount of capital and time expended on a scheme of this magnitude.

Competitor, M. Inst. C.E.

OWNERSHIP OF DRAWINGS.

Sir,—Can any of your numerous readers inform me who has a right to the plans of the buildings completed under an architect, who wrote to the proprietor as follows:—"According to promise, I herewith enclose my professional charges for preparing plans and details of, and superintending the erection of, your new premises, as above, viz., I agree to charge you for the above works, five per cent. upon the cost of same." Junius.

*** Unless any stipulation to the contrary be made (which does not appear in this case as stated above) we are advised that in law the building owner has the right to the plans; see the case of Eddy *v.* M'Govern, in "Roscoe's Building Cases," p. 31. As a matter of equity we dissent from this, holding that the plans are the architect's means of working in order to carry out a design, and that they should be his property; but the law appears to be the other way.

PARISH TAKING OVER ROADS.

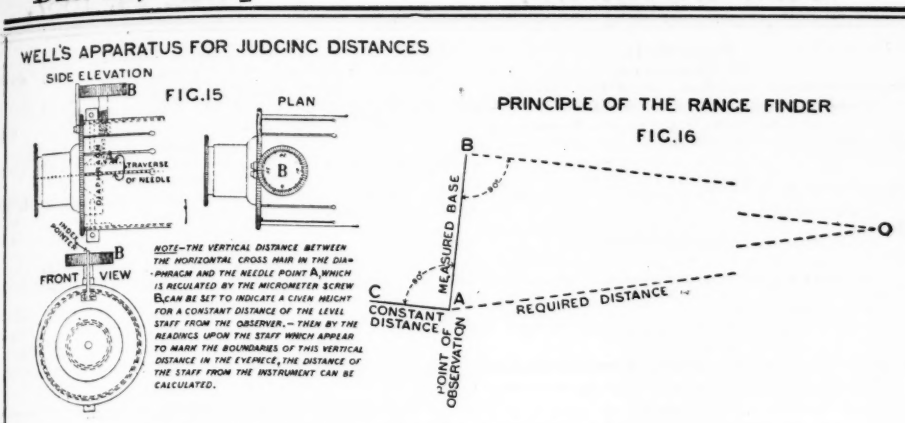
Sir,—What are the requisites to be fulfilled before the parish takes over a new road?

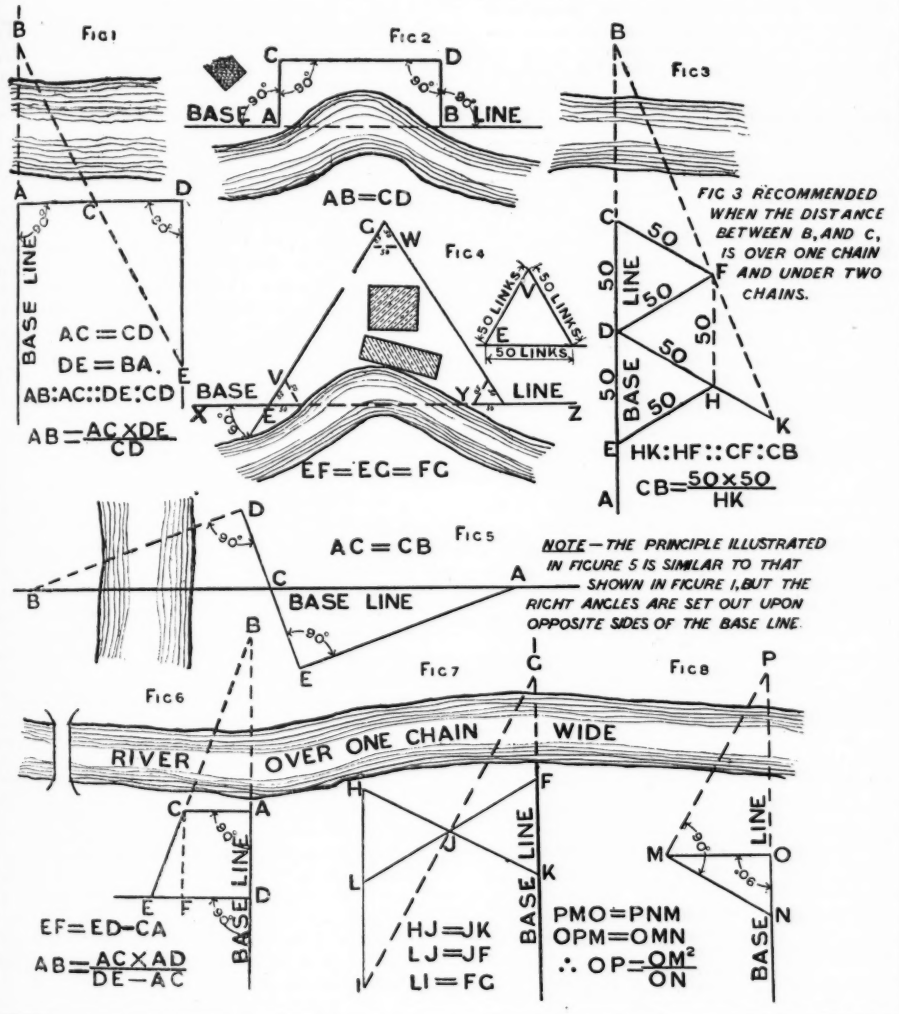
Is it at the pleasure of the Vestry whether a new road shall be taken over or not, although the parties interested may be able to show that the usual conditions have been fulfilled, or is there any, and what, remedy in case of refusal of the Vestry?

Reference to statutes or cases will oblige.

Freeholder.

"Whiteley's."—The "Universal Provider's" premises in Queen's-road, Bayswater, are rapidly rising from their ashes. As we have on two or three occasions mentioned, the "Doulton-Peto" hollow terra-cotta or fire-brick flooring is being adopted throughout the new buildings. We published a section and full description of this flooring in the *Builder* for Dec. 19, 1885, p. 877, and a section of it is now appearing in our advertisement columns. By the use of this flooring the iron joists are entirely covered, and a good key is left for plastering. The flooring is light, and permits of ready and rapid fixing with very little support in the way of centering, which can be suspended from above, and struck as soon as the cement joints are set, when the plasterers can commence work underneath. The same system is being adopted for the roofs of the new buildings, which will be flat. This method of flooring deserves to be better known than it is, on account of its lightness, rapidity of construction, and fire-resisting qualities. About 116,000 ft. super. of flooring are now being laid at Whiteley's on this system. Mr. W. Brass is the general contractor, and Alderman J. E. Saunders is the architect.


WELL'S APPARATUS FOR JUDGING DISTANCES
SIDE ELEVATION
FIG.15
PLAN
TRAVERSE OF NEEDLE
INDEX POINTER
FRONT VIEW
NOTE—THE VERTICAL DISTANCE BETWEEN THE HORIZONTAL CROSS HAIR IN THE DIAPHRAGM AND THE NEEDLE POINT A, WHICH IS REGULATED BY THE MICROMETER SCREW B, CAN BE SET TO INDICATE A GIVEN HEIGHT FOR A CONSTANT DISTANCE OF THE LEVEL STAFF FROM THE OBSERVER.—THEN BY THE READINGS UPON THE STAFF WHICH APPEAR TO MARK THE BOUNDARIES OF THIS VERTICAL DISTANCE IN THE EYEPIECE, THE DISTANCE OF THE STAFF FROM THE INSTRUMENT CAN BE CALCULATED.
PRINCIPLE OF THE RANCE FINDER
FIG.16
MEASURED BASE
CONSTANT DISTANCE
REQUIRED DISTANCE
POINT OF OBSERVATION



The Student's Column.

LAND SURVEYING AND LEVELLING.

XXVI.—DETERMINING DISTANCES.

FIG. 15 illustrates Wells' apparatus, which can be fixed to the diaphragm of any levelling telescope for the purpose of judging distance when taking trial levels without chaining the horizontal distances. It can also be introduced for the purpose of a check on chain measurements. The vertical distance between the horizontal cross-hair and the needle-point, A, can be regulated within the limits marked "Traverse of needle" in the diaphragm by means of the micrometer screw B, the top of which, as shown in the plan, is graduated to serve as a reference for setting the needle-point to any given distance. The index-pointer to this graduated circle is fixed upon the front of the breech end of the telescope, over the eye-piece, as shown in the front view. The needle, which is worked up and down by the micrometer screw B, travels in the same vertical plane as that in which the cross-hairs are fixed. To set the needle measure any distance, say 100 ft. upon level ground, set up the level so that the telescope stands over one end of the measured distance, while the staff is held at the other end. Focus the telescope accurately, and move the needle-point A in the diaphragm by the screw-head B, until exactly 1 ft. of the staff image is enclosed between the needle-point and the horizontal cross-hair in the diaphragm. In this way a datum "distance reading" may be obtained, from which other distances of varying lengths can be easily calculated. The divisions upon the top of the screw B (see plan), where the index-pointer touches, should be noted for future reference.

Fig. 16 illustrates the principle upon which Range-finders are constructed. If A O equals the distance to be found, three well-defined points or pegs are employed, and B is so placed that the angle A B O is a right angle, while C is placed perpendicular to A B at a constant measured distance in order to find the length of A B by actual measurement. The surveyor, standing at A, observes the quantity by which B A O is short of a right angle, and the measured base, A B, being arrived at, the instrument determines B O automatically. Practically, as A B is very short compared with the length of B O, the distance A O is equal to the distance B O. Thus the measurement mechanically of the non-parallelism between B O and A O determines the distance of the point O. The base may be taken any convenient length, but it is evident that accurate results can only be obtained when the distance is small compared with the distance required to be found. Among the best instruments may be mentioned the Bate range-finder, the Watkin range-finder, and Labbez telemeter.

Distances may also be arrived at without the use of an optical instrument by measurement upon lines adjacent to the required base line, when set out so as to form any one of the geometrical constructions shown in figs. 1 to 8. Although in figs. 1, 2, 5, 6, and 8, the right angles can be most readily set out with the aid of a cross staff (*Builder*, Jan. 29, p. 203) or an optical square (*Builder*, Jan. 1, p. 65), the perpendicular lines may also be set out by means of the chain only, as explained in the *Builder*, Sept. 17, p. 412. In fig. 1, the measured distance, D E, is equal to the required distance, A B. In fig. 2, the measured distance, C D, is equal to the required distance, A B. In fig. 3, the only distance required to be measured is H K, and this can be best done with a tape. The equilateral triangles are set out in fig. 3 in the same way as fig. 4, by fixing each end of the chain at two points upon the base line, 50 links apart, and then pulling out the chain tight by means of the middle brass indicator to determine the third point in the triangle. The construction of the remaining figures is explained by the diagram.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

11,407, Fire Escapes. R. B. Longe.

According to this invention, a simple form of ladder is laid horizontally across a frame mounted on wheels and pivoted to the frame at one end. When in use the free end is raised, while the other drops upon the ground. The topmost step of the staircase is made broader to serve as a platform over which one may pass from an upper window. A handrail is so pivoted to the side of the ladder that it can easily be raised or lowered as required.

678, Slag Paving Blocks. E. W. Jones and C. Brand.

In the manufacture of the paving-blocks, according to this invention, a turn-table on which the moulds are arranged rotates under the spout of the furnace, and the moulds are filled with as little waste as possible. The slag is guided by special distributors to the moulds. In annealing, a series of ovens, connected with one or more chimneys, and with passages or flues for hot air, is used. The blocks have wavy or indented sides to form a lock with the adjacent blocks.

698, Water-waste Preventer. O. Elphick.

The object of this invention is to provide a syphon delivery to ordinary double or single valve flushing-cisterns. For this purpose a chamber is formed at the bottom of the cistern, having a syphon leading from it to the delivery pipe. The cistern and chamber are connected together by a valve worked by a handle or pull of the closet or the like, and the opening of this valve is made of sufficient size to allow the contents of the flushing-cistern to quickly pass into the syphon-chamber so that even if the handle is released almost immediately after being pulled down, the time is sufficient for the water to transfer itself from one receptacle to another. From the syphon-chamber the water is delivered by means of the syphon.

756, Improved Kitchener. B. C. Sykes and G. Blamires.

The fire-grating of this kitchener is arranged near the floor line, the bottom of the range being preferably solid. The oven is placed immediately over the fire. The flues and dampers control the heat for one, two, or three ovens, and the water-heating appliance consists preferably of a coil of iron or copper pipe placed partly underneath the oven and behind the same in the flue space.

1,954, Door-fasteners. G. G. Smith.

This fastener consists of a swinging bolt which catches on a pivot pin made partly round and partly square, the square portion of the pin receiving an angular socket on the swinging bolt.

5,796, Automatic Discharge Valve. W. L. Holland.

This invention has for its object the construction of valve apparatus for discharging the contents of a cistern or tank in such a manner that when the ordinary discharge-lever, handle or other appliance has been actuated, all the water will be allowed to discharge itself from the cistern, whereupon the discharge outlet is then automatically closed. The novelty consists in the use of a valve which when closed resists the pressure of water in the cistern, and when open remains open until the cistern is emptied of its contents, and then closes again and remains closed until opened by means provided for that purpose.

NEW APPLICATIONS FOR PATENTS.

Dec. 9.—16,963, A. Illidge, Opening and Closing Fanlights, and Retaining them in any Position.—16,976, S. Jones and R. Roberts, Tenoning or Mortising Machines.

Dec. 10.—16,989, A. Hobson and J. Croft, Heating Air for Warming and Ventilating, &c.—16,997, H. Parker and A. Winder, Water-closet Cisterns.—17,005, H. Steven and J. Walker, Domestic Firegrates.—17,041, T. Martin, Gate Latch.

Dec. 12.—17,100, F. Vergara, Substitute for Glass for Ornamental Purposes.

Dec. 13.—17,121, J. Lister, Sash Locks.—17,136, A. Carter, Automatic Flushing Tanks or Cisterns.

Dec. 14.—17,189, F. Cook, Preventing Air and Dust passing under Doors.—17,179. H. Frost, Flushing Cisterns and Water-waste Preventers.—17,197, A. Bayley, Fixing and Securing Ornamental Substances for the Decoration of Bar Fittings.—17,205, T. Bailey, jun., Window Fasteners.—17,206, A. Hopkins, Water-closet Apparatus.

Dec. 15.—17,271, J. Honeyman, Water-closet Cisterns, &c.—17,281, S. Tuddenham, Ornamentation of Art Metal Work by the Use of Glass Globes or Balls.—17,285, H. Hancock, Curing Smoky Chimneys.—17,294, C. Wright, Telescope Screw Fasteners for Windows, Doors, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

12,084, W. Baldwin, Preventing Concussion in Water-pipes.—15,159, J. Lee, Groove and Tongue Cutting Machines.—15,306, J. Pauwels, Water Meters.—15,644, J. Petter, Joints of Gas, Water, and Other Pipes.—15,739, J. Stephens, Portland, Roman, and Other Cements.—15,773, F. Crane, Varnishes.—15,889, T. Grimbleby, Double Bar Lock Roofing Tile.—15,996, W. Lake, Preventing the Slamming of Doors.—16,234, J. Sheldon, Wall Ties or Bond Iron.—16,262, F. Seyde, Metallic Lathing or Backing for Plaster or Cement Partitions and Ceilings.—16,289, A. Illidge, Opening and Closing Fanlights, Skylights, &c., and Retaining same in any Position.—14,990, J. Knight, Reversible Metallic Tread, for Steps, Stairs, &c.—15,602, W. Wade, Sheet Steel Panels for Doors.—16,137, R. Deacon, Stop and Catch for Doors, Windows, Gates, &c.—16,238, C. Onions, Flushing Cisterns.—16,300, O. Elphick, Automatic Flushing Tanks.—16,322, W. Birdthistle, Draught and Dust Excluder for Doors, Windows, and Skirtings of Rooms.—16,399, E. Kent, Automatic Ventilating Apparatus.—16,456, F. Cook, Preventing Air and Dust passing under Doors.—16,505, W. Phillips and E. Verity, Sash Windows.—16,507, F. Collins, Indicator for Door Fastenings.—16,529, S. Bond, Apparatus to be used in the Manufacture of Bricks, Tiles, &c.—16,577, J. Tourtel, Automatically Closing Doors.—16,601, O. André, Glazed Roofs.—16,610, R. Adams, Opening and Closing Swing Windows, &c., and Fastening same at any desired Angle.—16,677, E. Nunan, Metal Laths for Building Purposes.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

16,312, W. Illingworth, Joiner's Adjustable Bench Stop.—414, T. Whalley, Water-closets.—2,112, J. Harris, Water-closets, and Ventilating Soil Pipes of same.—2,113, A. Walker and D. Bell, Raising, Lowering, and Securing Window Sashes.—2,305, H. Doulton and W. Rice, Ornamenting Pottery, Tiles, or Glass.—4,033, R. Ninnes, Casement Stay.—9,457, S. Hill and R. Hodges, Spring Hinges for Swing Doors.—15,096, S. and A. Fenn, Fireplaces of Kilns or Ovens for Burning Bricks, Tiles, &c.—1,414, W. Barnes and Others, Paint Brushes, &c.—2,428, Sir G. Chubb and H. Ball, Locks and Door Fastenings.—9,022, F. Naumann, Faced Bricks.—12,304, W. Heath and W. Geddes, Fireproof Curtains for Theatres, &c.—15,002, H. Reinicke, Ventilating Closets.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

DECEMBER 12.

By John Lees.

Crowhurst, Surrey — Freehold Brick and Tile Works; the residence called Drewsherne; the Brickmakers' Arms public-house; and Waste Farm, together about 105 acres, including mortgage	£5,020

By J. Baker & Son.

Battersea—5 to 11 odd, Afghan-road, 90 years, ground-rent 20*l.*	830
2 to 12 even, Khyber-road, 90 years, ground-rent 30*l.*	1,240
111 to 125 odd, Ingrave-street, 62 years, ground-rent 25*l.*	1,125

By Weatherall & Green.

Soho—53, Greek-street, freehold	1,520
Clapham—17, Lambourn-road, 57 years, ground-rent 6*l.* 6s.	330
19, Offerton-road, 80 years, ground-rent 6*l.* 10s.	390
Peckham—154, 156, and 172, Camden-grove North, 79 years, ground-rent 18*l.*	745
127, Camberwell-grove, 79 years, ground-rent 8*l.*	325
Chailey, Sussex—Holly Grove, and 12½ acres, copyhold	3,520

By W. Hall.

Haverstock-hill—3, Maitland Park-road, 64 years, ground-rent 9*l.*	450

By Driver & Prebect.

Stoke Newington—2 and 6, Millard-road, 85 years, ground-rent 11*l.*	455
Islington—401, Caledonian-road, 60 years, ground-rent 10*l.*	305
Canonbury—54, Pyrland-road, 62 years, ground-rent 6*l.* 6s.	410
Gray's Inn-road—44, Acton-street, 50 years, ground-rent 2*l.*	300
Whitechapel—10 and 12, Sutton-street, 10 years, ground-rent 16*l.*	75

DECEMBER 13.

By Driver & Co.

Regent-street—An improved rent of 639*l.* 3s. 4d., term 29 years	£9,000

By Chinnock, Galsworthy, & Co.

City, Carter-lane—Freehold rent of 242*l.*, reversion in 8 years	8,500

By Broad & Wiltshire.

Finsbury Park — 10, Portland-road, 71 years, ground-rent 16*l.* 16s.	600
Peckham — 3, East Surrey-grove, and 2, Cator-street, 76 years, ground-rent 10*l.* 10s.	270
Old Kent-road—26 and 28, Kinglake-street, and 60, Surrey-grove, 20 years, ground-rent 12*l.*	100
Camberwell — 173, Beresford-street, 18 years, ground-rent 10*l.* 18s.	75
Deptford—Ground-rents of 10*l.* 5s., term 56 years	115

By H. Rutley.

Fulham—1, Ashbocking-terrace, 83 years, ground-rent 6*l.* 1s.	315

DECEMBER 14.

By D. J. Chattell.

Gray's Inn-road—13, Calthorpe-street, 32 years, ground-rent 10*l.*	375
Widmore, Kent—The Old Wesleyan Chapel, freehold	135

By T. Woods.

Hampton, Wolsley-road — Christleton Villa, 97 years, ground-rent 4*l.*	170

By W. B. Hallett.

Bovey Heathfield, Devon—An improved rental of 25*l.* a year, term 32 years	190

By Reynolds & Eason.

Croydon—1 to 8, Croydon-cottages, freehold	1,620
1, Elmwood-road and stabling, freehold	460
Two plots of freehold land	450

By Moss & Jameson.

Soho—12, 13, and 13A, Greek-street, and a ground-rent of 56*l.*, reversion in 34 years, freehold, area 10,900 ft.	18,000
Holborn—3, Fullwood's-rents, freehold	380
Harrow—A plot of freehold land	26

DECEMBER 15.

By Rushworth & Stevens.

Brompton—13, South-street, 37 years, ground-rent 8*l.*	810
22, Alexander-square, 18½ years, ground-rent 4*l.*	605

By Farebrother, Palmer, & Co.

Paddington—13, Edbrooke-road, 75 years, ground-rent 7*l.*	500

By G. A. Wilkinson.

Peckham — 3 and 4, Staveley-road, 56 years, ground-rent 7*l.* 4s.	350
Chelsea—An improved rent of 79*l.*, term 21 years	910
Whitehead's-grove — The Brompton County Court, 21 years, no ground-rent	1,265
Greenwich—11 and 13, Church-street, freehold	1,230
1 to 5, Pennell's-court, freehold	250
1 to 4, Conduit-terrace, 34 years, ground-rent 16*l.*	290

By E. Stimson.

Brixton-road—36, Holland-street, 12 years, ground-rent 4*l.* 8s. 4d.	1,158
Rotherhithe—96, Albion-street, freehold	315
Lambeth—35, Lambeth-walk, freehold	480
85 and 86, Cornwall-road, 35 years, no ground-rent	690

By C. P. Whiteley.

Herne-hill—143, Dulwich-road, 79 years, ground-rent 1*l.*	310
Brixton—30, Pulross-road, 76 years, ground-rent 4*l.* 10s.	235
Clapham—48, Landor-road, 60 years, ground-rent 4*l.* 10s.	245
9 and 10, Willington-road, 57 years, ground-rent 10*l.* 10s.	360
Merton—1 to 6, Wandle-terrace, freehold	900

By Richardson & Barton.

Notting-hill—10, Ernest-street, freehold	760

By Bradshaw Brown.

Poplar—5, 6, and 7, Lodore-street, freehold	500
Stepney—126, Eastfield-street, freehold	160

By Messrs. Cronin.

Chelsea—40, Walton-street, 42 years, ground-rent 8*l.* 8s.	1,260
41, Ovington-street, 44 years, ground-rent 6*l.*	570
Maida-vale—12, Carlton-road, 61 years, ground-rent 8*l.*	800

By F. J. Bisley.

Rotherhithe—25, 26, 28, 29, and 30, Adam-street, freehold	1,040

By Dowsett & Co.

Shaftesbury-avenue, West-street—Freehold chapel	4,500
Sidmouth, Devon—The Woodlands, and 1¼ acre, freehold	1,400
Wokingham—An enclosure of freehold land, 65 acres	1,300
Crowthorne Farm, 29a. 2r., freehold	500
An enclosure of land, 11a. 3r. 2p., freehold	240
An enclosure of land, 29a. 1r. 18p., freehold	850
An enclosure of land, 51a. 3r. 34p., freehold	1,200
Euston-road—1, Crescent-place, 19 years, ground-rent 17*l.* 17s.	170

By Newbon & Harding.

Islington—213, Liverpool-road, freehold	455
36, High-street; and 1 and 2, Smith's-buildings, freehold	1,450
255 and 257, Liverpool-road, freehold	1,560
182 and 183, Upper-street, copyhold	2,000
32, 34, and 38, High-street, freehold	3,920
Holloway—36 and 38, Holloway-road, freehold	900
Fitzroy-square 12, Pitt-street, copyhold	1,010
Notting-hill—11, Lansdowne-road, freehold	1,400
Tottenham, High-road—Salisbury House, copyhold	860

DECEMBER 16.

By Salter, Rex, & Co.

Blandford-square—27, Broadley-terrace, 50 years, ground-rent 5*l.*	530
St. John's-wood—29, New-street, 40 years, ground-rent 5*l.* 6s.	420

By Chadwick & Sons.

Mile-end—127, Antill-road, 59 years, ground-rent 5*l.*	320

By Pettitt, Son, & Byrne.

Fitzroy-square—14 and 15, Pitt-street, copyhold	1,240
16 and 18, Pitt-street, copyhold	1,265

By Dyer, Son, & Hilton.

Lee—31, Southbrook-road, 76 years, ground-rent 3*l.*	£400

By Towers, Williamson, & Ellis.

Paddington—16, 18, and 20, Brindley-street, 57 years, ground-rent 20*l.*	675

By Mr. March.

Notting-hill—70 and 72, Ladbroke-grove, freehold	2,000
West Kensington—6 and 8, Netherwood-road, freehold	1,740
10, Netherwood-road, freehold	690
A Ground-rent of 8*l.*, reversion in 16 years	200

By R. Reid.

Charing Cross-road—The letting on lease for 80 years, a plot of land, area 4,160 ft., realised 310*l.* a year.	
Adjoining lot, 1,246 ft., 155*l.* a year.	
Shaftesbury-avenue—2,950 ft., 120*l.* a year.	
3,400 ft., 610*l.* a year.	
3,220 ft., 910*l.* a year.	
3,690 ft., 1,520*l.* a year.	

Miscellanea.

The Building Sites in the New West End Thoroughfares. Important Lettings. The second public letting of the building sites in Shaftesbury-avenue and Charing Cross-road, belonging to the Metropolitan Board of Works, took place at the Auction Mart on Friday, the 16th instant, in the presence of a very crowded attendance of builders and capitalists, one of the largest rooms at the Mart being inconveniently filled. The plots submitted were six in number, and comprised the most valuable sites in the two thoroughfares. Mr. Robert Reid conducted the auction. The sites were described as having commanding frontages to Piccadilly-circus, Charing Cross-road, and Shaftesbury-avenue, and as specially suitable for the erection of banks, insurance offices, residential chambers, or other public buildings. The first lot submitted comprised a plot having a frontage of 83 ft. 5 in. to Charing Cross-road, and covering an area of 4,160 ft. It was stated that as regards this lot the Metropolitan Board, by deed dated November 25th, 1887, had granted to the Marquis of Salisbury and the trustees of a settlement of the family estates, a perpetual right of way over a portion of the land comprised in the lot, to be formed into a roadway 12 ft. in width, with a headway of at least 12 ft. in the clear to and from Charing Cross-road, and that the lessee would have to take the lot subject to this grant. After some spirited bidding the lot was let on a rental of 310*l.* per annum. All the other lots were also let in rapid succession; a plot in Charing Cross-road, adjoining the last-named lot, having a frontage of 40 ft., and covering an area of 1,246 ft., being let for 155*l.* per annum. A plot at the corner of Shaftesbury-avenue and Dyott-street, Bloomsbury, having a frontage on the north-west side of Shaftesbury-avenue, and 52 ft. on the west side of Dyott-street, and covering an area of 2,950 ft., was let for 120*l.* per annum. Another plot at the corner of Shaftesbury-avenue and Denman-street, Soho, and close to Piccadilly-circus, having a frontage of 56 ft. on the north-west side of Shaftesbury-avenue, and of 98 ft. 9 in. on the south side of Denman-street, and covering an area of 3,400 ft., was let for 610*l.* per annum. This was followed by another lot in Shaftesbury-avenue, adjoining the last lot, having a frontage of 75 ft., and covering an area of 3,220 ft., which was let for 910*l.* per annum. The last lot was described as a very important and commanding plot at the corner of Shaftesbury-avenue and Piccadilly-circus, having a frontage of 108 ft., and covering an area of 3,690 ft. The auctioneer drew attention to its being on the direct line to Regent-street, and as one of the most valuable sites at the West End. It was let for 1,520*l.* per annum, the aggregate amount of the lettings being 3,625*l.* per annum, on leases for a term of 80 years. The lowest amount to be expended in building on the six sites is 27,000*l.* The conditions provide that the several buildings are to be erected subject to the approval of the Board or their architect, that plans are to be submitted by the several lessees within three months after the date of the letting, and that within two months after the plans have been approved, the construction of the buildings is to be commenced.

The Mission Church, Lowden-road, Herne-hill, was re-opened on Monday last. A chancel has been erected, and rooms for Bible classes and mothers' meetings, the additions being in exact accordance with the original building. The work has been executed by Mr. C. Goad, builder, Camberwell, under the direction of Mr. H. Lovegrove, F.S.I., who has given his services.

British Archæological Association.—At the meeting of this Association, on Wednesday, December 7th, Mr. Thomas Morgan, F.S.A., in the chair, Mr. Earle Way described further discoveries of Roman remains at Southwark, during the progress of the works for the new street through the Mint. These include evidences of the existence of buildings of various kinds, the water-supply to them having been by terra-cotta pipes, several of which about an inch in bore and 25 in. long were found. Considerable quantities of Roman pottery have been discovered at a level about 12 ft. or 14 ft. below the present surface. Not the least curious of the finds was that of a dog's skull, with some of the teeth purposely broken, possibly to prevent certain kinds of game from being destroyed. It was found on part of the site of the palace of the Dukes of Suffolk. Mr. R. Howlett exhibited an ancient MS. of the early part of the fifteenth century, curious for a record by which it is apparent that 160 of its pages were written between February 4, 1402, and April 22nd. The parchment has been that of a still more ancient MS. pumice-stoned to an even surface. From a word or two that can be detected, the earlier MS. was one on Canon Law. A paper was then read on a Roman bronze sword found at Bossington, Hants, by the Rev. Canon Collier, F.S.A., read in the author's absence by Mr. Loftus Brock, F.S.A. Mr. Romilly Allen, F.S.A. Scot., described the remarkable cross at Ruthwell, N.B., which has recently been set up within the church in a very praiseworthy manner by the Rev. M. McFarlane, aided by a Government grant. A paper was next read by the Chairman on the work of the Association during the past session, and the proceedings were brought to a close by another paper on "Relics of Mary Queen of Scots," prepared by Mr. H. Syer Cuming, F.S.A. Scot.

Artisans' Dwellings, Lisson Grove.—The Artisans', Labourers', and General Dwellings Company, whose houses of the cottage type at Shaftesbury Park (Clapham Junction), Queen's Park (Harrow-road), and Noel Park (Hornsey), are well known, are taking a new departure in the erection of dwellings in flats. This, the Company's first experiment of the kind, consists of large buildings in Lisson-grove, providing accommodation for 250 families, the tenements being mostly of two or three rooms each, though there are single-roomed tenements and four-roomed tenements. The buildings are being carried out by the Company, from plans by Mr. F. T. Pilkington, architect, Mr. Weare being the managing foreman on behalf of the Company. The buildings are solid and substantial, with the principal façades of red brick and moulded concrete, the general architectural effect being more elaborate and less monotonous than that of most blocks of buildings of the kind. The concrete dressings, trusses, copings, &c., also the concrete steps of stairs, flue-blocks, and partition walls (3-in. slabs stiffened with iron) have all been made *in situ*. The iron girders, &c., have been supplied by Messrs. Measures Brothers, and the flat roofs have been covered with asphalte by the French Asphalte Company (Limited), of Cornhill, in an admirable manner. We may possibly have more to say of these dwellings later on.

The Vacant District Surveyorships.—At the meeting of the Metropolitan Board of Works on the 16th inst., Mr. W. Shepherd moved the adoption of the Building Act Committee's report with reference to the decease of Mr. E. Woodthorpe, late District Surveyor for the District of the Northern Division of the City of London, and the District of St. Anne, Limehouse, St. John, Wapping, the Precinct of St. Katherine, and the Hamlet of Ratcliff, and recommending—(*a*) That a District Surveyor be appointed for each of the two districts; that the usual course be taken for filling the office of District Surveyors for such districts; that advertisements be issued inviting candidates for the appointments, and that the Board do proceed to the elections on Friday, the 13th January, 1888. (*b*) That Mr. J. D. Mathews, Mr. G. Elkington, jun., and Mr. C. Foulsham, District Surveyors, who have addressed the Board on the subject, be informed of the course taken. This was agreed to.

Appointment.—Mr. F. S. Granger, M.A., A.R.I.B.A., Nottingham, has been appointed Lecturer in Classics and Philosophy to the Nottingham University College. We understand that this appointment will not interfere with Mr. Granger's other duties.

Crystal Palace School of Practical Engineering.—The certificates of merit to the students of this school in the winter term just closed were distributed on Saturday last at the school by Mr. W. H. Preece, in the presence of a large number of the students and their friends. Mr. Shenton, the Superintendent, having read the report of the examiners, which was of a satisfactory character, Mr. Preece delivered an address to the students, in the course of which he said the art of engineering was constantly embracing a wider and wider area. In days of old it was said that an ounce of practice was worth a ton of theory, but that notion was now thrown to the winds, and at the present time theory and practice must go hand in hand. It was impossible for an engineer to visit that school and see the drawings and models and apparatus without feeling that the course of instruction pursued in it was of the most satisfactory character. There was a close attention to detail which was the root of all human progress, and the result was that the students of that school had acquired a high reputation in all parts of the world to which they had been sent.—Mr. Wilson, the principal, stated that, including those now in it, there had been 690 students in the school since it began fifteen years ago; that 172 of them became Students of the Institution of Civil Engineers, and that out of that number sixty-six had already passed to the grade of Associate-members of that institution.

Obituary — The *Newcastle Chronicle* announces the death, on the 14th inst., of Mr. John Lowry, the senior partner of the well-known firm of John and William Lowry, builders and contractors, Corporation-street, Newcastle. Mr. Lowry, who was in his sixty-fourth year, was a son of the late Mr. Joseph Lowry, builder, Raffles, near Carlisle. He came to Newcastle about forty years ago, and in conjunction with his brother has carried on an extensive business as a contractor during that period. During the great strikes that occurred many years ago in this district in connexion with the building trade, Mr. Lowry was the Chairman of the Master Builders' Association. He leaves a widow, two sons, and two daughters.

Compensation for Defective Drainage.—Damages for injury brought about by defective sanitary states of dwellings are by no means common, and for this reason alone it is worth recording that towards the close of last month 100*l.* were awarded as compensation to a gentleman who had lost his daughter by reason of the defective drainage of the house he occupied. We are not aware of the particular circumstances of this case, but as a general principle we think that the responsibilities of landlords who seek to make gain by letting houses which are, in point of health, unfit for human habitation need to be strongly pressed home; and every such case as the above aids in this direction.—*Lancet.*

A New Hot-Water Pipe-Joint has just been invented at the Tyldesley Ironworks, owned by Mr. John Grundy, of London. It is to be used in the fitting up of his combined apparatus (pure warm air and hot water) for heating churches, schools, and public buildings. It is claimed for the new pipe that it is impossible for the joint to blow off or become loose during expansion and contraction. Provisional protection has been secured by the patentee.

Shakspeare Memorial Tower. — The munificent gift of Mr. George Childs, of Philadelphia, presented to the town of Stratford-on-Avon, was specially designed by Mr. J. A. Cossins, architect, of Birmingham. The clock is by Mr. J. W. Benson, of Ludgate Hill, London, and strikes the hours and quarters upon hemispherical bells.

Blinds.—We understand that Messrs. Janes & Son, Aldersgate-street and Piccadilly, have received the appointment of Blind Makers to Her Majesty's Works and Public Buildings in the London District, also to the Royal Palaces, and at Hampton Court, Kew, and Richmond, the museums, post-offices, Houses of Parliament, Royal Law Courts, &c.

Messrs. Pontifex & Wood.—It is announced that the old-established business of engineers, coppersmiths, white lead and chemical manufacturers, carried on by the above-named firm for upwards of a century, has been converted into a limited company. No shares, however, will be issued to the public.

Horeham Hurst, Sussex.—In our notice of this building, under "Illustrations," last week, the words "filled in between the double lath and plastering" should have been "filled in between *with* double lath and plastering."

London.—Messrs. T. & W. Farmiloe have just completed and fixed a stained-glass window at Christchurch, Jamaica-street, E. The subject is "The Ascension."

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	10	0	7	15	0
Teak, E.I. ....load	8	0	0	12	10	0
Sequoia, U.S. ....foot cube	0	2	3	0	3	0
Ash, Canada ....load	3	0	0	4	10	0
Birch ,, ...	2	0	0	3	10	0
Elm ,, ...	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,, ...	2	10	0	4	10	0
Canada	3	0	0	6	0	0
Pine, Canada red	2	0	0	3	10	0
,, yellow	2	0	0	4	0	0
Lath, Dantsic ....fathom	3	0	0	5	0	0
St. Petersburg	4	0	0	5	10	0
Wainscot, Riga ....log	0	0	0	0	0	0
,, Odessa, crown....	2	10	0	3	0	0
Deals, Finland, 2nd and 1st...std.	100	7	10	0	9	0	0
,, 4th and 3rd		6	0	0	8	0	0
Riga		5	10	0	7	10	0
St. Petersburg, 1st yellow		8	10	0	14	0	0
,, 2nd ,, ...		7	0	0	8	0	0
,, white		6	10	0	8	0	0
Swedish		6	15	0	15	0	0
White Sea		7	0	0	16	10	0
Canada, Pine, 1st		16	0	0	24	0	0
,, ,, 2nd....		10	0	0	15	10	0
,, ,, 3rd, &c....		7	0	0	9	10	0
,, Spruce, 1st		8	0	0	9	10	0
,, ,, 3rd and 2nd....		5	0	0	7	0	0
New Brunswick, &c....		5	0	0	7	0	0
Battens, all kinds		4	0	0	10	10	0
Flooring Boards, sq., 1 in., prepared, First		0	8	0	0	11	6
Second		0	6	6	0	7	6
Other qualities		0	4	0	0	6	0
Cedar, Cuba ....foot		0	0	3½	0	0	3½
Honduras, &c.		0	0	3	0	0	3½
Australian		0	0	2	0	0	3
Mahogany, Cuba		0	0	4½	0	0	7
St. Domingo, cargo average		0	0	4½	0	0	6
Mexican ,, ...		0	0	3½	0	0	3½
Tobasco ,, ...		0	0	4	0	0	5
Honduras ,, ...		0	0	4	0	0	5
Maple, Bird's-eye		0	0	5	0	0	7
Rose, Rio ....ton		8	0	0	11	0	0
Bahia....		7	0	0	9	0	0
Box, Turkey		5	0	0	12	0	0
Satin, St. Domingo ....foot		0	0	5	0	0	9
Porto Rico		0	0	6	0	0	10
Walnut, Italian		0	0	4	0	0	5½
METALS.							
IRON—Bar, Welsh, in London...ton		4	15	0	5	0	0
,, ,, in Wales		4	5	0	4	10	0
,, Staffordshire, London		5	10	0	6	0	0
COPPER—							
British, cake and ingot ....ton		0	0	0	0	0	0
Best selected		0	0	0	0	0	0
Sheets, strong....		0	0	0	0	0	0
Chili, bars		80	10	0	0	0	0
YELLOW METAL....lb.		0	0	6	0	0	6½
LEAD—							
Pig, Spanish ....ton		15	5	0	0	0	0
English, common brands....		15	10	0	0	0	0
Sheet, English		16	10	0	0	0	0
SPELTER—							
Silesian, special ....ton		20	10	0	21	0	0
Ordinary brands....		20	0	0	20	10	0
TIN—							
Straits....ton		166	10	0	0	0	0
Australian		166	10	0	0	0	0
English ingots		0	0	0	0	0	0
OILS.							
Linseed ....ton		19	0	0	19	7	6
Cocoanut, Cochin		29	0	0	30	0	0
Ceylon		23	15	0	0	0	0
Palm, Lagos		21	10	0	0	0	0
Rapeseed, English pale		26	10	0	0	0	0
,, brown		25	0	0	0	0	0
Cottonseed, refined		19	15	0	20	0	0
Tallow and Oleine....		25	0	0	45	0	0
Lubricating, U.S.		5	0	0	6	0	0
,, refined....		5	0	0	12	0	0
TURPENTINE—							
American, in casks ....cwt.		1	4	9	0	0	0
TAR—							
Stockholm ....barrel		0	15	0	0	0	0
Archangel		0	10	0	0	0	0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *Noon on Thursdays.*]

BATH.—For repairing and re-covering roof, and restoring the elevations of the Guildhall, Bath, for the Bath Corporation. Mr. C. E. Davis, City Architect :—

T. Laver (accepted)	£880	0	0

CROYDON.—For additional class-room, lavatory, and cloak-room (boys' department), taking down and re-erecting boys' and girls' playsheds, &c., at the South Norwood Schools, for the Croydon School Board. Mr. Robert Ridge, Surveyor to the Board, architect. Quantities by the architect :—

Pateman & Son	£850	0	0 !
Acworth & Co.	789	0	0
Smith & Bulled	749	0	0
Henley & Co....	682	0	0
Verrall	679	0	0
Bowyer & Son	659	0	0
King Bros.	659	0	0
Bryan	616	0	0
Marriage	598	0	0
Barton...	580	0	0
Smith & Sons	567	0	0
Wyatt & Co.	528	0	0
Caplin (accepted)....	498	0	0

CONTRACTS AND PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Alterations and Additions to Premises	Wandsworth, &c., Un.	T. W. Aldwinckle	Dec. 29th	ix.
Lock-up, Watford	County of Hertford	Urban A. Smith	Jan. 3rd	ii.
Cart and Implement Shed	Brighton Town Council	P. C. Lockwood	do.	i.
Jubilee Clock Tower, Margate	The Committee	Stoner & Sons	do.	ix.
Wood Paving	Hammersmith Vestry	*Official*	Jan. 4th	ii.
Masons' and Paviors' Work, Wood Paving, &c.	Westminster B. of Wks.	G. R. W. Wheeler	do.	ix.
Road-Making and Paving Works	Hammersmith Vestry	*Official*	Jan. 9th	ix.
Corn Store, Canterbury	Mr. H. E. Taylor	Hall & Jennings	Jan. 10th	ix.
Painting, &c.	St. Pancras Guardians	*Official*	Jan. 18th	ix.
Furnishing Ironmongery	Schl. Board for London	do.	Not stated	ix.
Works and Materials	Liverpool Corporation	do.	do.	ix.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Foreman of Roads	Chelsea Vestry	100*l.*, &c.	Dec. 28th	xv.
Architect's Assistant	Met. Board of Works	120*l.*	Dec. 31st	xiv.
Borough Surveyor	Burnley Cor.	350*l.*	Jan. 7th	xv.

EASTBOURNE. — For new infirmary, Eastbourne Union, Sussex, for the Guardians. Mr. F. G. Cooke, A.M.I.C.E., architect, 3, Hyde-gardens, Eastbourne. Quantities by Mr. C. Stanger, surveyor, 21, Finsbury-pavement, E.C.:—

Rowland Bros.,* Horsham	£6,900	0	0
Coster, Eastbourne	6,794	0	0
Smith, Worthing	6,790	0	0
W. Martin, Ramsgate	6,750	0	0
Longley, Crawley	6,500	0	0
Newman & Hart, Eastbourne	6,455	0	0
Robson, Snaresbrook	6,437	0	0
Peters,* Horsham	6,425	0	0
Mark Martin, Eastbourne	6,410	0	0
Peerless, Eastbourne	6,372	0	0
Wood, Eastbourne	6,300	0	0
Parker, Eastbourne	6,135	0	0
Tomkinson, Eastbourne (accepted)	6,100	0	0

[Architect's estimate, 6,350*l.*]

* Received too late.

HAMPSTEAD.—For erecting house at Netherhall-gardens, for Mr. E. Filletter. Mr. Geo. Sherrin, architect:—

Holland & Hannen	£3,488	0	0
J. W. Falkner	3,459	0	0
Hall, Beddall, & Co.	3,450	0	0
Stimpson & Co.	3,180	0	0
Lawrence	3,109	0	0
J. Chapman, Hackney	2,987	0	0

KENSINGTON.—For repairs to No. 29, St. Mary Abbot's-terrace, Kensington, for Dr. Dent. Messrs. George & W. Ralph Low, architect:—

Barrett & Jordan, Earl's-court	£287	11	6
Holliday & Greenwood, Brixton	245	10	0
Dove Brothers, Islington (accepted)	185	0	0

KINGSLAND.—For erecting class-room, &c., at the Birkbeck Middle-Class Schools, for the Trustees. Mr. J. J. Thomson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Lang	£557	0	0
Whitehead & Co.	555	0	0
Sargeant	525	0	0
Scott	517	0	0
Exton & Burton, Birkbeck Works, Kingsland	499	0	0

LONDON. — For additions and alterations to 33, Cadogan-terrace. Mr. E. W. Buckle, architect, 23, Bedford-row. Quantities by Mr. T. W. Goodman, 9, Buckingham-street, Strand, W.C.:—

Wall Bros.	£1,679	0	0
Adamson & Sons	1,655	0	0
Grover & Son	1,600	0	0
Roberts	1,598	0	0
Dove Bros.	1,575	0	0
Nightingale	1,520	0	0
Bywaters	1,485	0	0
F. Sanders	1,483	0	0

LONDON.—For erecting warehouse premises, Bishopsgate-street Without. Messrs. Lander & Bedells, architects, 6, John-street, Bedford-row, W.C.:—

Lawrance & Son	£20,710	0	0
Colls & Son	20,540	0	0
Williams & Son	20,235	0	0
Outhwaite & Son	19,991	0	0
Brass & Son	19,771	0	0
Ashby & Horner	19,540	0	0
Brown & Co.	19,523	0	0
Nightingale	19,470	0	0
Stephenson	19,199	0	0
Mattock Bros.	19,133	0	0

LONDON.—For building a warehouse in Star-court, Bread-street, for Messrs. Copestake & Co. Mr. Charles Innes, architect, 27, Queen-street, City:—

J. & J. Greenwood	£3,849	0	0
Colls & Sons	3,670	0	0
E. Conder	3,653	0	0
T. J. Messom	3,620	0	0
Rider & Son	3,588	0	0
Hall, Beddall, & Co.	3,560	0	0
Prestige & Co.	3,543	0	0
J. M. Macey & Sons	3,460	0	0
Brass & Son (accepted)	3,393	0	0

LONDON. — For alterations and additions at 102, Holland-road, Kensington, for Mr. James Caldwell, M.P. Mr. Edward Tidman, C.E., architect, Connaught-mansions, Victoria-street, Westminster:—

Foster	£212	0	0!
Bennett	189	0	0
Ball & Co.	168	0	0
Correy & Son	160	17	6
Kelland	84	18	0!

PUTNEY.—For the erection of stabling, shed, smithy, cottage, &c., at Cheverton-road, High-street, Putney, for the London General Omnibus Company, Limited, under the superintendence of Mr. G. T. Lanham. Quantities by Mr. A. J. Bolton:—

Flew & Co.	£4,118	0	0
Sabey & Son	4,065	0	0
Turtle & Appleton	3,980	0	0
Harvey	3,975	0	0
Stephenson	3,693	0	0
Haynes	3,450	0	0
Hunt	3,449	0	0
Evans	3,410	0	0
Knight	3,400	0	0
Toms	3,376	6	0
Parker	3,349	0	0
Garrud	3,277	0	0

SOUTHAMPTON.—For the erection of out-patients' block, covered way, and dispensary, at the Royal South Hants Infirmary, Southampton, as a Jubilee Memorial of Her Majesty's reign. Mr. W. H. Mitchell, architect, Southampton:—

John Witt, Bitterne, near Southamptom (accepted)	£1,888	3	0

[Twelve Tenders were received.]

SOUTHAMPTON.—For re-instating damage done by fire, and sundry repairs, at 109, East-street, Southampton. Mr. W. H. Mitchell, surveyor, Southampton:—

T. J. Jukes, Freemantle, Southampton (accepted)	£325	0	0

WILLESDEN.—For making-up private roads, for the Willesden Local Board.—Contract No. 34.

—	Dean Road.	Chapter Road.	Lechmere Road.	Huddlestone Road.	Strode Road.	Hazel Road.	Ravensw'rth Road.	College Road.	Purves Road.	Felixstowe Road.	Greyhound Road.	Mayo Road.	Park Road.	Melville Road.	Tavistock Road.	Wendover Road.	Tubbs Road.	Nightingale Road	Honeywood Road.	Denzil Road.	Victoria Road.	Park Mews.
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Neave & Son	680	419	489	470	904	576	455	755	836	541	637	1130	153	363	266	117	1050	849	320	480	290	369
Nowell & Robson	602	381	445	428	822	660	503	867	950	595	700	1030	178	401	293	128	1165	943	381	437	255	311
Felton	709	434	499	470	871	636	492	840	908	570	679	1072	176	383	298	118	1115	914	368	467	277	313
Boyer	—	468	545	517	—	734	558	972	1057	659	815	—	—	—	—	—	—	—	—	—	316	358
Catley	660	395	485	455	845	—	—	—	—	—	—	—	170	366	—	—	—	—	—	—	265	—
Mowlem	788	445	517	494	941	652	489	871	936	573	701	1171	169	396	311	125	1181	950	378	496	293	366
Rowland Bros.	723	445*	575	490	907†	666	495	852	937	577	703	1080	160	387	298	125	950	938	386	490	289	369
Jones	669	402	—	467	—	—	—	—	—	—	—	—	—	—	275	135	—	957	354	—	—	—
Bell	641	383	461	445	845	782	472	759	846	528	658	1009	158	352	280	127	1067	865	319	454	241	298
Nelson	685	399	472	453	840	615	462	818	878	552	651	1040	158	362	287	122	1085	892	350	446	277	340
Neal	654	383	458	440	801	565	429	750	787	505	609	999	154	340	278	121	990	796	330	454	266	353
Hall	826	491	565	540	980	676	542	939	1004	628	768	1174	176	417	341	127	1258	983	391	532	328	335
R. Ballard	628	312	439	423	792	582	427	779	824	511	600	984	151	359	266	125	1017	839	333	421	280	377

* And 13s. 4d. † And 10s.

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